Engaging Reluctant Countries in Climate Change Mitigation Efforts

A club approach

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Abstract

The parties to the UN climate negotiations have time and again failed to agree on ambitious emissions reductions targets that can "prevent dangerous anthropogenic interference with the climate system" (UN, 1992, p. 9). Lately, state leaders and UN officials have expressed great hopes for finally reaching a universal and legally binding climate agreement at this year's meeting of the UNFCCC parties in Paris. Game-theoretical perspectives on climate negotiations tell another story. The UN climate negotiations are characterized as a Prisoners' Dilemma where countries are better off free riding on the efforts of others. Thus, an effective climate agreement must ensure that countries' incentives for participation and compliance be restructured.

Drawing on the argument that climate change is a global public good, I argue that a club approach can achieve such restructuring under the right circumstances. Previous scholarly contributions in the field of club theory (mainly David Victor) propose climate clubs as a setting that enables countries willing to use own resources to combat climate change to coordinate their efforts and simultaneously create incentives for reluctant countries to participate. The analysis focuses on two types of incentives that enthusiastic countries might utilize in a club context, namely conditional commitments and club goods. Exploring various models and proposals of such incentives and using both primary and secondary sources, I aim to advance current knowledge concerning the prospects for effective climate cooperation through climate clubs. I argue that, it is the very ties between conditional commitments and club goods that might strengthen participation and compliance. I find that under the right circumstances, these incentives can successfully induce reluctant countries to follow suit. In particular, a club approach can help change the climate change mitigation game into a coordination game. However, I also find that a troubling U.S.-China relationship, risks of carbon leakage, processes of negative spillover into other multilateral efforts, existing trade laws, and protectionist concerns constitute substantial barriers for developing an effective climate club.

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All remaining errors in this thesis are my responsibility alone.

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List of abbreviations

20-20-20	The EU's climate and energy targets for 2020
BTAs	Border Tariff Adjustments
CAD	Climate Accession Deals
CCS	Carbon Capture and Storage
COP	Conference of the Parties
EGs	Environmental Goods
ETS	Emissions Trading System
EU ETS	EU Emissions Trading System
G77	UN Group of 77
GATT	General Agreement on Tariffs and Trade
GHG	Greenhouse Gases
IEA	International Energy Agency
IPR	Intellectual Property Rights
IPCC	Intergovernmental Panel on Climate Change
MAC	Marginal Abatement Costs
MFN	Most-Favoured-Nation
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
UNFCCC	United Nations Framework Convention on Climate Change
UNEP	United Nations Environment Programme
WTO	World Trade Organization

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1 Introduction

According to article 2 of the 1992 United Nations Framework Convention on Climate Change (UNFCCC), the treaty aims at stabilizing greenhouse gases in the atmosphere to avoid dangerous human- made climate changes. The parties to the agreement have further operationalized this objective to keeping global average warming below 2°C, compared to pre-industrial levels (UN, 2010, article 2). However, recent analyses conducted by the United Nations Environment Programme (UNEP) establish that national governments have failed to implement the necessary measures and policies to meet this target by 2020, as outlined in the Kyoto Protocol's second commitment period. In fact, the increase of annual anthropogenic GHG emissions is accelerating (IPCC, 2014). If the parties continue their emissions in the same manner, they will have to face higher costs and risks in order to meet the demands of the Climate Convention (UNEP, 2013). Several scholars have pinned national governments' failure of meeting own Kyoto targets to the protocol's defective enforcement mechanisms and argued that it has not provided sufficient incentives for participation and compliance (see Hovi et al., 2013; Barrett, 2007).

The UNFCCC's lack of success in effectively managing climate mitigation has resulted in a range of research on alternative institutional designs that could facilitate an *effective* climate agreement. Considering effectiveness as a major criterion for a successful agreement, Hovi et al. (2013, p. 139) define an effective climate agreement as one causing "substantial emissions reductions". The term "substantial" is not based on any particular target, contrary to the 2°C target adopted by the UN. The authors argue that an effective climate agreement can be reached either *directly* (by immediately entering into an "all-party climate agreement with potent enforcement mechanisms") or *indirectly* (by gradually preparing for an all-party agreement) (Hovi et al., 2013, p. 145). "Climate clubs" have been proposed as an institutional setting that indirectly might reach an effective climate agreement, provided that it offers sufficient incentives for participation and compliance.

Several theoretical contributions have been published on clubs, as further presented in section 1.2. Some have focused specifically on climate clubs. David Victor's book *Global Warming Gridlock* (2011) stands out in this respect because it explains *why* and *how* a club approach is useful to ensure effective international cooperation on climate change mitigation. First of all, solving the climate change problem poses extraordinary political challenges compared to

other environmental agreements. Combined with the fact that climate change mitigation represents a global public good, the considerable time span between political decisions and the benefits of emissions reductions causes a free rider problem at the international level. According to Barrett (2007), in order to overcome free riding, climate negotiations need to be transformed from a collaboration game into a coordination game. Doing so demands a restructuring of participating countries' incentives. Furthermore, the discussion on climate change is characterized by large gaps between countries when it comes to responsibility, vulnerability and capability to address the issue. An effective climate agreement has to find mechanisms that can bridge these gaps. Victor (2011) explains the UN gridlock by pointing to this unique combination of political issues posed by climate change. In his opinion, the use of binding universal law is not suited to combat climate change despite it being functional in other fields of international environmental collaboration. Additionally, veto mechanisms obstruct the UNFCCC from reaching an agreement that meets the necessary enforcement requirements. Instead, applying a logic based on economic considerations and national self-interest, he launches a "carbon club" as an alternative pathway to an effective climate agreement. The idea is that enthusiastic countries craft club benefits that under the right conditions can entice reluctant countries to join the club.

My analysis concentrates on two main types of incentives: conditional commitments and club goods. Making implementation of own policies contingent on what other states do comprises the essence of conditional commitments. They can be crafted in many ways, as I explain in section 1.3.1. The second incentive, club goods, allows states to shift attention away from providing a public good for future generations and instead focus on producing economic and political benefits through mitigation activities, which benefits their present-day voters. Most importantly, the overall composition of club goods should compensate for taking on the costs of joining (also referred to as club fees). Section 1.3.2 provides examples of potential club goods.

Throughout this thesis I draw on Hovi et al.'s (2015, p. 7) definition of a climate club as "any group that (1) starts off with fewer member countries than the UNFCCC has and (2) aims to cooperate on one or more climate-change related activities, notably mitigation, adaptation, climate engineering, or climate compensation". In order to limit the scope of my thesis I focus my attention to mitigation efforts.

In essence, an *effective* climate agreement is able to bring about substantial emissions reductions. To do so it must to deter states from free riding on mitigation efforts of other states that are willing to implement more ambitious climate policies. A climate club provides a setting where enthusiastic countries could motivate reluctant countries to follow suit by setting up sufficiently attractive incentives. Two main incentives a club could employ are conditional commitments and club goods.

1.1 Research Question

This thesis aims at answering the following research question:

What are the conditions (if any) under which a club might lead to an effective climate agreement?

In order to answer this question, I examine the possibility of applying two types of incentives in a climate club through the following sub-questions:

1) Under which conditions can conditional commitments by enthusiastic countries induce reluctant countries to follow suit?

2) Under which conditions can club goods induce reluctant countries to follow suit?

1.2 Previous Research

Barrett's (2007) game- theoretical contribution on the nature of the climate change issue and obstacles for international cooperation on the matter serve as a backdrop for the discussion on climate clubs. I especially draw on his conclusion, which claims that a future climate agreement has to succeed in restructuring the incentives for participation and compliance. In his opinion, the Kyoto Protocol failed to do so. He advocates technical standards as a way forward towards transforming the climate change mitigation game from a Prisoners' Dilemma to a coordination game. I argue that, under the right circumstances, a club approach can similarly create a coordination game by providing attractive club benefits.

The club approach is built on previous research on cooperation in small groups. Buchanan's

(1965) prominent club-theoretical work added club goods to the previous polarized categorization of goods (private versus public goods). Sandler and Tschirhart (1997) expand on Buchanan's (1965) characteristics of club goods. Furthermore, Prakash and Potoski (2007) present a second club model: "voluntary clubs". Their model focuses on crucial elements that might be included in the institutional design to deter free riding and non-compliance.

Another strand of literature relevant for analysing the prospects of applying a club approach on climate change mitigation focuses on climate governance architectures. Zelli et al. (2010) discuss how fragmented architectures influence the efficiency of policies. The authors investigate four factors in particular: speed, ambition, participation and equity.

Moving on to the academic literature on existing climate clubs, Weischer et al. (2012) present a comprehensive evaluation of 17 clubs' contribution to climate change mitigation. They divide existing climate clubs into two groups: dialogue forums and implementation groups. However, the scholars find that none of these have been able to induce reluctant countries and thus produce transformational changes, according to the targets proposed by the scientific community. Andresen (2014) similarly reviews a selection of exclusive approaches that facilitate climate change cooperation. He questions the effectiveness and legitimacy of these regimes compared to the UNFCCC.

Lastly, Victor (2011) presents "Carbon clubs" as a third club model. The idea is that enthusiastic countries agree on conditional, complex deals and install incentives to entice reluctant countries to join the club by negotiating similar deals. Still, Victor claims that developing club policies and mechanisms that could introduce an effective climate agreement would most likely face serious barriers at the domestic level: "The losers are well positioned to block costly changes, the winners aren't yet on the field, and the broader public won't see much benefit from a cleaner environment for some time" (2011, p. 119). In order to close the time span between political decisions and benefits from emissions reductions, a club would have to change this dynamic of winners and losers.

1.2.1 Contribution to Previous Research

My review of previous research on climate clubs reveals that none of the currently existing climate clubs have managed to bring about transformational change as envisioned by Victor

(2011). Accordingly, research should focus on how a future climate club can implement ambitious climate policies instead of merely establishing itself as yet another discussion club in the existing "regime complex" (Andersen, 2014; Keohane & Victor, 2011). In short, it is necessary to analyse whether a club approach is in fact capable of doing what the UNFCCC has failed to do: construct an *effective* climate agreement.

By examining under what conditions conditional commitments and club goods can successfully incentivise reluctant countries, I hope to gain a better understanding of whether a club approach might constitute an alternative to the UN track. My thesis contributes to the existing literature on climate clubs by providing a thorough analysis of main elements of a club and of the conditions affecting these elements' ability to actually engage reluctant countries to take part in ambitious climate policies. Scholars have directed their attention to establishing conditions for either well-functioning conditional commitments or club goods. I combine the two incentives and methodically assess proposed models for conditional commitments and club goods.

1.3 Research Design

The aim of this thesis is to assess whether a club approach is a suitable theoretical framework for developing an effective climate agreement as an alternative to existing modes of cooperation. The assumption that a small group of enthusiastic countries might induce reluctant countries to join if the right incentives are applied functions as a theoretical starting point. The feasibility of a club approach is examined through a twofold analysis of possible incentives a climate club could incorporate, namely conditional commitments and club goods. These incentives are closely connected when it comes to the prospects of solving free-riding at the international level. Both analyses are structured according to conditions for successfully counteracting free-riding and incentivising reluctant countries. The following paragraphs present the main features of each club element.

1.3.1 Conditional Commitments

The fourth chapter aims to render visible under what conditions conditional commitments launched by enthusiastic countries may motivate reluctant countries to contribute to the global public good. Previous research suggests that the leader's level of *credibility* and *leverage* are central factors but depend on followers' ability to coordinate their efforts to

meet the leader's condition. Such *coordination* is achieved most easily if the public gains are shared evenly (Helland et al., 2015). This previous research also establishes that, even under favourable conditions, conditional commitments do not fully solve the free-rider problem at the international level. I introduce *legitimacy* as a fourth condition that moderates a climate club's chances of producing an effective climate agreement. Carbon leakage, fragile China-U.S. relations and states advocating conflicting burden-sharing principles are some of the impediments for realising this outcome.

The concept of conditionality can be incorporated in a club in numerous ways and I assess these various forms of conditional commitments. The EU's 20-20 by 2020 policy plan serves as an example of how an enthusiastic leader can attempt to induce reluctant countries to implement ambitious emissions reduction targets. Victor (2011) outlines the concept of contingent commitments as loosely framed and non-binding agreements that are negotiated through Climate Accession Deals (CADs). The commitments are termed contingent because the bids made by each state concerning what policies it might implement are conditional upon what measures other members adopt.

1.3.2 Club Goods

A club good is a good provided to its club members with minimal rivalry in consumption and where exclusion demands small costs (Hovi et al. 2015, p. 174[1]). In theory, there are endless possibilities of which activities and policies club members could cooperate on. Academic suggestions include mutually advantageous terms of trade and investment, cooperation in R&D programs in renewable energy technology and access to carbon markets (Hovi et al., 2015, p 11; Weischer et al., 2012, p. 188). I explore these suggestions through in-depth studies of previous usage of such instruments and reviews of theoretical contributions about how to install them in a climate club.

Under the right circumstances, club goods may be able to deter reluctant countries from free riding on the mitigation efforts of others and instead entice them to participate. However, the success of applying club goods as incentives is subject to specific conditions. The second part

[1]Hovi et al. (2015) base their definition on Ostrom et al.'s (1994) work on common-pool resources. Contrary to the definition of club goods applied by Buchanan (1965), the authors include goods without congestion effects in their use and also goods that generate benefits that increases together with higher levels of participation, which is a prerequisite for installing successful club goods in a climate club.

of the analysis aims to outline how these conditions affect club goods' ability to motivate outsiders to join the club in order to get a share of these exclusive benefits. I apply Weischer et al.'s (2012, p. 192) suggested conditions. The first condition is *significance*. Significant club goods are a pre-requisite for tipping reluctant countries' cost-benefit analysis of club membership in the right direction. Secondly, in order to deter free riding on the club's efforts, club goods must be kept *exclusive.* Scholars have questioned how a climate club can ascertain that the club goods do not benefit outsiders in the future, for instance through technology diffusion. The third condition relates to developing a catalogue of club goods that provides *benefits to all members.* In order to incentivise as many countries as possible to join the club, club benefits have to accommodate the needs of all its members. The fourth condition requires club goods to be *integrative with existing international law*. International regulations might pose obstacles for establishing certain club goods and should be considered. Lastly, based on Weischer et al. (2012), I use *credibility* as a fifth condition. Installing trade restrictions as sanctions in a club is closely connected to the issue of credibility.

1.3.3 Method

The concepts of conditional commitments and club goods are applied as analytical tools to study how a climate club might deal with specific challenges of free riding associated with climate agreements. In effect, this means outlining under what conditions each element can be effective and assessing whether a climate club can fulfil these conditions. The analytical perspectives complement each other and incorporating only one of these elements in a club might limit the effect of applying such incentives.

Building on previous scholarly contributions, the analysis is guided by an exploratory approach. Because conclusions from previous research suggest that a climate club similar to Victor's proposal does not yet exist, empirical observations of current clubs are not suitable for answering my research question. Coupled together with the fact that my thesis deals with the prospects of creating a *future* climate agreement, it cannot be classified as a case study. Nor would it be reasonable to assume that it provides a full account of what a future climate club could look like. The suggestions on potential club benefits and club designs are vast. As a consequence, I cannot rule out the possibility that important factors might have been omitted from my analysis. This means that the results may to some degree be biased due to choices of including certain factors while overlooking others. Still, the analysis is well

founded in academic literature on clubs and climate negotiations, thereby limiting these risks. Thus, the analysis provides key insights about which issues some of the main proposed models of conditional commitments and club goods are likely to face. This knowledge can be useful for policy-makers that consider using these tools to form a coalition of countries willing to address global warming. The analysis especially concerns itself with aspects of political feasibility, international regulations, and economic considerations, and how policy-makers might respond to these interacting processes. Also, it deals with some major emitters more than others due to their pivotal role in climate change negotiations. The United States, China and the EU are subject to particular attention.

1.3.4 Sources

In order to arrive at a better understanding of how specific policy instruments can be applied in a climate club, I apply sources of academic literature in addition to published policy documents and agreements. Parts of the analysis are largely founded on secondary literature. With regard to the research question, competing theoretical views on the prospects of an indirect effective climate agreement are scrutinized.

Additionally, the thesis makes use of specific primary sources. First of all, reports issued by the IPCC provide the necessary scientific background on global warming. Secondly, the original text of the UNFCCC (1992) and following climate treaties are treated as essential sources for understanding the objectives and processes behind the climate negotiations this far. In chapter four, documents released by the Council of the European Union and the Commission of the European Communities are analysed to gain insight into the European Union's climate and energy policies, most notably it's 20-20-20 policy objectives. In order to assess the prospects for successful cooperation through the U.S.-China Strategic and Economic Dialogue (S&ED), reports published by the U.S.-China Climate Change Working Group (CCWG) are utilized. Furthermore, the analysis examines U.S. legislation on climate policies to advance knowledge about domestic political factors that steer the state's behaviour in international climate negotiations. In the fifth chapter, the discussion on trade-related measures and international regulations utilizes several documents published by the WTO, especially the General Agreement on Tariffs and Trade (GATT) (1994) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) (1994). Lastly, a World Bank report (2007) on gains from liberalizing trade on clean energy technologies provides

valuable information on the matter.

1.4 Thesis Outline

This thesis consists of six chapters, including the introduction. In chapter two, the background for and the development of the global climate negotiations are presented. The third chapter explains the rationale for and key aspects of the club approach, before reviewing previous research specifically related to climate clubs. The fourth chapter embarks on the analysis by discussing potential designs of conditional commitments. Chapter five investigates potential club goods according to conditions for successfully applying them as incentives for reluctant countries. Potential challenges are outlined in both chapters. Lastly, the sixth chapter summarizes the main points of the analysis and reflects on their implications for a club approach.

2 Climate Negotiations

The following chapter outlines the role of the IPCC, the emergence of the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol and central amendments to these agreements. The purpose is to provide some background for the ensuing analysis of climate clubs.

2.1 IPCC

The Intergovernmental Panel on Climate Change (IPCC) was founded by UNEP and WMO in 1988 and remains under the auspices of the UN (Alfsen et al., 2000). IPCC has held a central position in the UNFCCC process and provides the scientific basis for political decisions by continually assessing new evidence of climate change, especially anthropogenic changes[2]. Part of the evaluations made by the panel is collected in assessment reports issued approximately every 5th year. So far, five assessment reports have been released with the latest finalized in 2013/2014. IPCC's work is structured in three working groups, a task force and a task group (IPCC, 2014). The IPCC Working Group I (WG I) concentrates on the physical scientific evidences of climate change. The IPCC Working Group II (WG II) deals with climate change impacts, adaptation and vulnerability whereas the IPCC Working Group III (WG III) focuses on climate change mitigation. The latest volume issued by WG I as part of the 5th assessment report renders visible the intricately connected and unpredictable challenges of climate change (IPCC, 2013). It presents evidence of warming in the atmosphere, ocean and cryosphere[3] that gives rise to changes in extreme weather; ocean acidification; glacier melting; reduction of mass on the Greenland and Antarctic ice sheets; and sea level rise, among other events. The report establishes that human influence on the climate system is unmistakable as supported by "increasing greenhouse gas concentrations in the atmosphere, positive radiative forcing, observed warming, and understanding of the climate system" (IPCC, 2013, p. 15).

[2] Anthropogenic climate changes are man-made changes to the climate.
[3] The cryosphere are the portions of the Earth's surface where water is in solid form, frozen into ice or snow.

2.2 The United Nations Framework Convention on Climate Change (UNFCCC)

During the 1980s global warming as a result of changes in the atmospheric chemical composition became a growing concern for natural scientific researchers (Alfsen et al., 2000, p. 7). As a consequence of the increased focus on climate change, partly through IPCC's work, the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) established a working group with the purpose of outlining a draft for an international climate treaty. In 1990 the General Assembly of the United Nations (GA) set up the Intergovernmental Negotiating Committee for the Framework Convention on Climate Change (INC/FCCC) that drafted the UNFCCC adopted at the United Nations Conference[4] held in Rio de Janeiro 1992. Today there are 196 parties to the convention[5] (UN, 2014f). The ultimate objective of the treaty is, as stated in article 2:

> stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time- frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner (UN, 1992, p. 9).

One of the main principles outlined in article 3 is the responsibility of developed countries to "take the lead in combating climate change" (UN, 1992, p. 9). In order to follow this principle of burden sharing, the parties of the Convention are divided into three groups: Annex I countries, Annex II countries and developing countries. Annex I contains a list of industrialised countries whereas Annex II comprises the industrialised countries that were members of the OECD at the time the treaty was signed. The Annex I countries committed to stabilising emissions at their 1990 levels by the year 2000 but the treaty did not specifically operationalize the targeted amount of greenhouse gases (GHGs) in the atmosphere or outline the measures needed to accomplish this goal. Furthermore, these targets were not legally binding. However, the Convention mattered in that it recognized the issue of climate change as a first step towards climate change negotiations. The Conference

[4] The United Nations Conference on Environment and Development (UNCED), also called Earth Summit.
[5] 195 countries and 1 regional economic integration organisation.

of the Parties (COP) functions as the governing body of the UNFCCC with annual meetings. The following sections outline key COPs that have taken place and their outcomes.

2.3 The Kyoto Protocol

In 1997, COP3 was held in Kyoto and resulted in the Kyoto Protocol. Formal reviews of the the UNFCCC's development concluded that "the voluntary aim approach" needed to be altered in order to reach the ultimate objective outlined in article 2 (Oppenheimer & Petsonk, 2005, p. 204). As a result, the protocol introduced legally binding emission reduction targets for the Annex I countries with a commitment period lasting from 2008-2012 (Ramakrishna, 2000). By doing so, the protocol followed the principle of developed countries leading the organisation's mitigation efforts. The protocol entered into force in 2005 after 55 Annex I countries responsible for at least 55 % of total carbon dioxide emissions in 1990 signed and ratified the treaty (Alfsen et al., 2000). Each signatory's specific emissions reductions commitments are outlined in the protocol's Annex B. The United States remained on the outside of the protocol, partly due to domestic concerns about developing countries (one of them being China) being exempted from legally binding reduction targets[6] and the protocol's effect on the national economy. The expected effect from accomplished targets in the protocol on global warming was minimal and the second commitment period needed to introduce more ambitious goals in order to have the necessary impact on the process of climate change. Additionally, the protocol's enforcement mechanisms have been labelled weak (Grubb et al., 1999). Article 18 states that the parties should establish effective procedures and mechanisms in order to deal with non-compliance at the next COP. A final agreement on this was reached in Marrakech in 2001. The Marrakesh accords provided a set of compliance mechanisms to promote compliance and establish procedures for cases of non-compliance (Nentjes & Klaassen, 2004).

2.3.1 Flexibility Mechanisms

The Kyoto Protocol established three flexibility mechanisms for cost-efficient cooperation on emission reductions. Each mechanism has its own trading units and is equal to one tonne of CO_2. Registry systems at UN level and national levels administer the emissions trading scheme (UN, 2014c).

[6] The U.S. Senate reached a unanimous decision on not ratifying the Kyoto Protocol unless key developing countries also were bound by "specific scheduled commitments" (Senate Resolution 98, 1997). The decision is also known as the Byrd Hagel resolution.

I) International Emissions Trading (ET)

On the basis of the percentages inscribed in Annex B, each country is able to calculate its allowed emissions in the form of assigned amount units (AAU). Any country with a surplus of AAU can trade units with another country that has exceeded its target. The commodity exchange is carried out in the international carbon market.

II) Joint Implementation (JI)

In order to meet its target, Annex B countries can earn emissions reduction units (ERUs) by contributing to an emissions reduction project in other Annex B countries (UN, 2014d). Depending on the host country's ability to meet certain eligibility criteria, signatories can follow track 1 or track 2 procedures. In the latter, the Joint Implementation Supervisory Committee (JISC) establishes a body that decides if the JI project in question account for additional emission reductions or enhancement of emission removal than would otherwise be the case.

III) Clean Development Mechanism (CDM)

Entering into force in 2006, the CDM can be characterised as the first international, environmental investment and credit scheme. It includes non-annex I parties as well as industrialised countries. By assisting developing countries in "achieving sustainable development" through financing certified project activities, Annex I countries can earn certified emission reduction (CER) credits that help towards meeting their commitments[7] ("Kyoto Protocol to the United Nations Framework Convention on Climate Change," 1998, article 12). Examples of project activities are use of solar panels in rural electrification projects and setting up energy-efficient boilers (UN, 2014b). After a third party verifies emission reductions as a result of the project, carbon credits are handed out by the CDM executive board. Next the project developer sells these credits to any interested industrialised country (UN, 2014a). According to recent numbers provided by the UNFCCC, 266 programmes of activities (PoAs) are in place and the 2013 report on CDM issued by the CDM executive board informed of 7293 registered projects (UN, 2013; UN, 2014e).

[7] CERs acquired between 2000-2008 can be used by Annex I countries to meet reduction targets set out in the first commitment period (UN, 1998).

2.4 The Copenhagen Accord

The COP15 in Copenhagen was characterised by a tug of war between parties advocating a legally binding agreement (e.g. EU and Norway) and parties reluctant to agree to any binding reduction targets (e.g. the United States and Canada) (Stryken, 2013). It resulted in the Copenhagen accord that lists national, voluntary pledges on targets for the year 2020 and contain no binding emissions reduction commitments. The parties agreed that "deep cuts in global emissions are required according to science, and as documented by the IPCC Fourth Assessment Report with a view to reduce global emissions so as to hold the increase in global temperature below 2°C, and take action to meet this objective consistent with science and on the basis of equity"(UN, 2010, article 2). The 2°C target was originally launched as a policy objective by the EU in 1996, after recommendations from the scientific community (Randalls, 2010, p.598). Several developing countries did not agree to the accord based on lack of concrete targets and some accused the drafting process of being an unofficial procedure with only 25 selected state leaders participating[8] (The Economist, 2010). As a consequence, the seven pages long document was merely taken note of by the COP15. In other words, the accord functioned as a set of goals the parties could choose to adopt.

The conference was considered to achieve only marginally tangible outcomes by both the media and public but some signs of progress could be detected. Contrary to the Kyoto Protocol, the Copenhagen accord establishes that "mitigation actions taken by non-Annex I countries will be subject to their domestic measurement, reporting and verification the result of which will be reported through their national communications every two years" (UN, 2010, article 5). Some argued that this recognition of developing countries' responsibilities in mitigation efforts was crucial in overcoming the divide between developed and developing countries that to some degree had obstructed previous climate negotiations (The Economist, 2009). The Copenhagen accord decided to set up a Green Climate Fund (GCF) as a financial mechanism in order to support adaptation measures; the REDD+ (Reducing Emissions from Deforestation and Forest Degradation) project; and technology transfers and development in the developing countries. As a last point, the accord advises "an assessment of the implementation of this Accord to be completed by 2015" (UN, 2010, p. 7).

[8] Cuba, Venezuela, Bolivia and Nicaragua protested about the procedure and Lumumba Stanislaus Di-Aping of Sudan voiced concern on behalf of the G77+ China group about the treatment of developing countries (The Economist, 2010).

2.5 The Durban Platform, the Doha Amendment, and the Road Towards Paris

The COP-17 held in Durban in 2011 decided that the following COPs would focus on preparing a legally binding deal to be agreed on at COP-21 in Paris, 2015 (Hedegaard, 2012). Negotiations followed a new structure as "The Durban Platform", gathering all the parties in one forum, replaced the old system of working groups that differentiated between developed and developing countries. The conference established an Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) in order "to develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties" (UN, 2012, p. 2). The parties are expected to finish a first draft of the new agreement at COP-20 in Lima, Peru, in December 2014 based on the negotiation text drafted by the working group.

In the following COP-18 held in Doha, Quatar, "the Doha Climate Gateway" aimed at mobilizing political will towards meeting the 2015 deadline for a universal agreement binding its signatories to ambitious mitigation efforts from the year 2020 (UN, 2014g). The conference produced a document of amendments to the Kyoto protocol, namely the Doha Amendment. It launched a second commitment period lasting from 2013 to 2020 and provided rules on how AAUs dating from the first commitment period could be transferred to the second commitment period. With 30 countries having ratified the amendment (as of 7th May, 2015) it has not yet entered into force (UN, 2015).

The Secretary-General of the United Nations, Ban Ki-moon, saw the climate summit in New York, September 2014, as creating the political momentum needed to reach a universal, binding agreement to replace the Kyoto Protocol in Paris 2015 (UN, 2014h). Others have shared his optimistic view on the prospects of a productive outcome at COP-21 with regards to political events that have occurred in China, the U.S. and India following the failed attempt at reaching a climate agreement in Copenhagen. The new Chinese president, Xi Jinping, is said to prioritise climate policy to a larger degree than the previous president, Hu Jintao. A move to greener politics is also believed to follow the inauguration of new Indian Prime Minister Narendra Modi (The Economist, 2014).

2.6 Summary

First, the chapter's section on IPCC provided a short introduction to the organization's work and presented the basic scientific processes behind global warming. Next, the UNFCCC and the most important agreements that have emerged from the following COPs were presented. These are the Kyoto Protocol and its flexibility mechanisms, the Copenhagen Accord, the Durban Platform and the Doha Climate Gateway. Overall, the chapter provides a backdrop for discussing the current gridlock in the UN climate regime. Next chapter presents a game theoretical framework for understanding this gridlock and global climate negotiations in general. Furthermore, it outlines previous scholarly contributions on club theory.

3 Club Approach

This chapter outlines the club approach to climate cooperation. It starts out by reviewing how the nature of the climate change issue and game- theoretic premises about the provision of global public goods necessitate employing a club approach to achieve effective mitigation instead of merely continuing along the UN track of climate negotiations. A future climate agreement needs to be founded on a restructuring of incentives in order to surmount the problem of free- riding. Under the right circumstances, a climate club could fulfil this task. Furthermore, previous theory on clubs is presented, ranging from general club theory to theoretical contributions specifically addressing climate clubs.

3.1 Game Theory and Global Public Goods

Arguments in favour of an alternative approach to international cooperation on climate change can be found in the literature on global public goods. Barrett (2007) deals with the provision of global public goods using game theory. He defines global public goods as non-rival and non-excludable goods that benefit all of humanity and argues that these characteristics pose problems for the provision of such goods. Even though global public goods range from climate change mitigation to prevention of mass disease, Barrett thinks that successful incentives to supply a global public good in one area can be the source of valuable knowledge for managing the provision of another type of public good. Nevertheless, the various global public goods are subdivided into groups according to whether they demand cooperation, level of financing, international institutions, challenges of enforcement, and the amount of states needed to contribute to the provision of these goods. The types are classified as single best efforts, weakest links, aggregate efforts, mutual restraint and coordination (Barrett, 2007, p.1).

Using climate change mitigation as an example, aggregate efforts are especially prone to free riding due to a combination of four attributes (Barrett, 2007, p. 74). First of all, the survival of human kind does not hinge on the provision of this type of global public good. The consequences of highly damaging climate changes may indeed prove to be catastrophic but the uncertainties about the effects and outcomes are high. Coupled with the great amount of focus being given to adaptation measures and its prospects for solving issues related to climate change, there seems to be a widespread belief that societies will be able to adapt

before the occurrence of such detrimental events. Secondly, states vary according to vulnerabilities; responsibilities; and capacities to address the issue. This is what is commonly referred to as asymmetries between countries. Contrary to cases of single best efforts and weakest links, the event of climate change may actually benefit some countries. Another crucial point is the costly nature of mitigation efforts. The high costs associated with combating climate change could result in other goods being neglected and also give rise to new challenges. To demonstrate, emissions reductions would most likely result in an increase of nuclear energy use that in turn would exacerbate issues related to nuclear proliferation and waste storage. Lastly, successful mitigation depends on the total contribution of all states. In order to move past these issues and deter free riding, incentives to participate in mitigation efforts need to be restructured and ensure that "countries are better off participating than not participating, and better off complying than not complying" (Barrett, 2007, p. 93). In Barrett's opinion, the Kyoto Protocol has failed at this task because it does not provide effective enforcement mechanisms that ensure participation and compliance to the agreement.

Barrett (2007, p. 82) recommends using trade restrictions as enforcement for an agreement based on technical standards. To put it differently, mitigation efforts should be turned into a coordination game with tipping. According to Barrett, well-functioning trade restrictions have to fulfil two conditions; namely severity and credibility. Section 5.5.1 deals with the prospects of including *credible* trade restrictions in a climate club. A high participation level is specified as a necessary condition to avoid trade leakages[9], which might be of some concern for the chances of institutionalising trade restrictions in a club, at least from an early stage. Although a coordination game based on technical standards may be a feasible approach to climate change mitigation, this thesis utilizes Barrett's contribution in a different manner. It assesses to what extent a club approach can help change the climate change mitigation game from a Prisoners' Dilemma to a coordination game. Because climate change mitigation is a Prisoners' Dilemma, it is rational for states to free ride on others' mitigation efforts. Increasing the participation level in the mitigation game entails that each state's individual gains from participation are reduced (Hovi, 2008, p. 55). In other words, the best strategy is to defect (D), not cooperate (C). However, in a coordination game with tipping, the payoffs from contributing are higher than the payoffs from defecting after reaching a certain level of participants, i.e. after a certain tipping point (Barrett & Dannenberg, 2015). Barrett and

[9] Trade leakage happens when production restrictions by a small group of countries creates an incentive for the production to be relocated to a country not subject to these restrictions (Barrett, 2007, p. 80).

Dannenberg (2015, p. 2) explain the game as follows: "on one side of the tipping point, no player wants to supply the public good; on the other side, every player wants to supply it". Still, current UN climate negotiations continue to apply a Prisoner's Dilemma approach: the underlying idea is that if all states choose to contribute, they will all benefit from reduced global warming. While a collaboration game can thus achieve the first best outcome, a coordination game with tipping is only able to achieve a second best outcome (Barrett & Dannenberg, 2015). Nevertheless, the strong incentives for free riding in a collaboration game make coordination games a strategically better option. Figures 3.1 and 3.2 illustrate the logic behind the two different approaches. To clarify, the thesis shifts focus from treating mitigation as a global public good towards examining how employing club goods, together with other measures, can restructure incentives for participating in mitigation efforts. Hence, it is crucial that enthusiastic countries provide incentives capable of attracting a sufficient amount of reluctant countries to reach the tipping point.

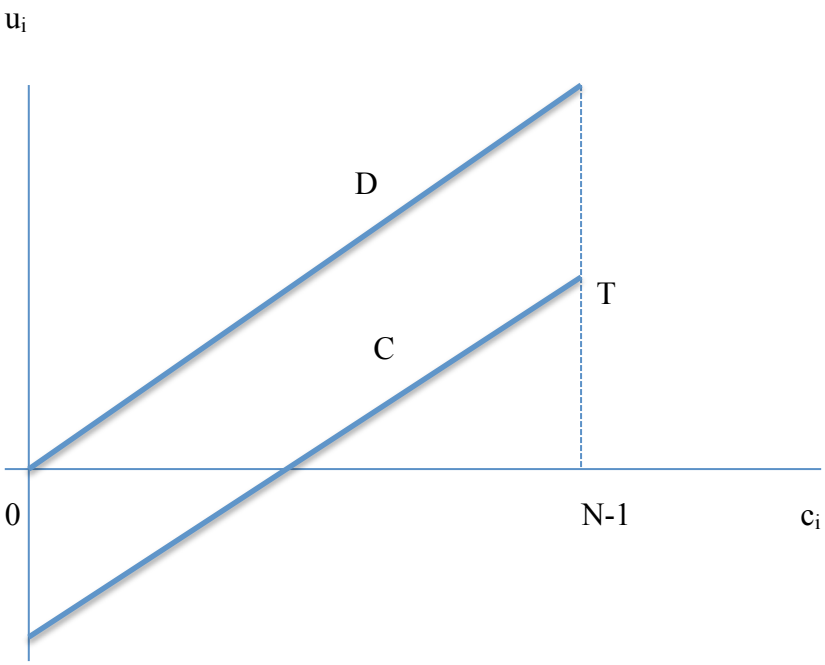

Figure 3.1: N-player Prisoners' dilemma
Source: Hovi (2008, p. 56)

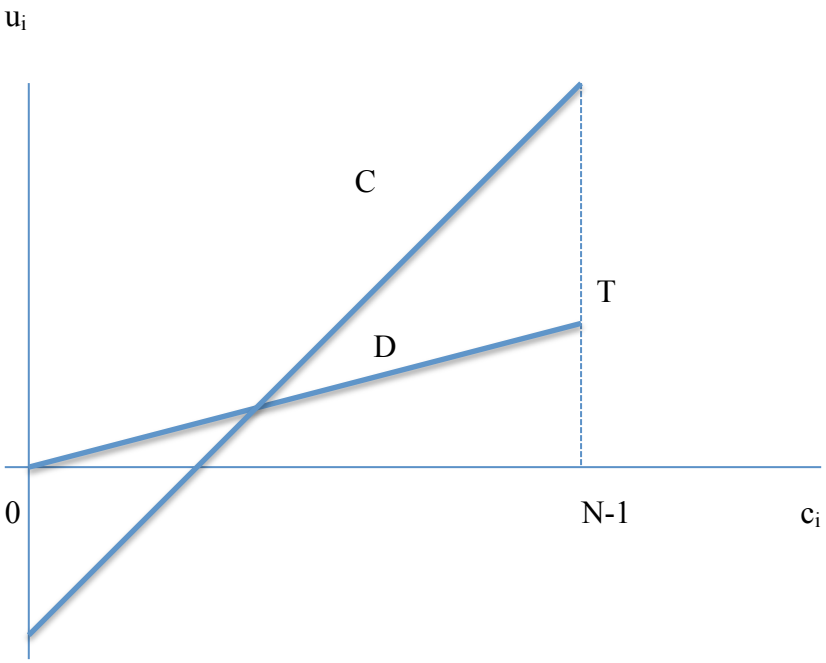

Figure 3.2: Coordination game with tipping
Source: Barrett (2003, p. 95).

To conclude, global public goods theory can be applied as a supporting argument for adopting a new approach in order to provide reluctant countries with sufficient incentives to address global warming. While Barrett and Stavins (2003, p. 350) propose technical standards as a solution, the club approach represents a third path towards such restructuring. Under the right conditions, club benefits might induce states to join the club and comply with specific emissions reduction targets.

3.2 Club Theory

Drawing on Sandler and Tschirhart's (1997, p. 335) definition, a club is "a voluntary group deriving mutual benefits from sharing one or more of the following: production costs, the member's characteristics, or a good characterized by excludable benefits".

The economist James Buchanan's (1965) work has remained in the forefront within the field of club theory. It aimed at developing new forms of ownership-consumption relationships. Up to this point, the theoretical debate had been centred on a polarization of purely private goods at one end of the spectrum and purely public goods at the other end. By launching the concept of club goods, Buchanan sought to change this perception. Club goods were described as excludable and with some possibilities for rivalry in their consumption in cases

of congestion. This form of goods could therefore be located between private goods (rivalry in consumption and costless exclusion) and public goods (no rivalry and no possibilities of exclusion).

Sandler and Tschirhart (1997) provide a detailed account of other ways that club goods differentiate from pure public goods. First of all, club goods are by definition voluntary as opposed to public goods, which need not be. Members choose to take part in the club if they deem the benefits to be greater than the costs of joining. Secondly, because club goods are shared among members, congestion may occur. In their opinion, the possibility of congestion makes it a necessity to limit the size of the club. As a third point, Sandler and Tschirhart (1997) underscore the element of exclusivity. Clubs need effective mechanisms to exclude non-members from enjoying the club goods and to administer membership fees. However, the exclusion mechanism should also provide actors with incentives strong enough to deter free riding.

In addition to the first club model proposed by Buchanan (1965), Prakash and Potoski (2007, p. 776) introduce "voluntary clubs" as a second model. These clubs were proposed as a solution to ensure the provision of positive social externalities. Attractive club goods might recruit new members but at the same time the voluntary model create social externalities and private benefits[10]. The social externalities can take on various forms ranging from private, public and club goods.

Prakash and Potoski (2007) explain how the institutional design of voluntary environmental programmes may deter members from free riding and shirking[11], which is similar to non-compliance. The benefits of producing social externalities have to be excludable in order to decrease the possibilities of free riding on the club's reputation. To solve the problem of shirking a club should establish compliance mechanisms, such as monitoring and sanctioning. Still, the level of non-compliance depends on the stringency of enforcement and monitoring rules. Prospective club members are required to meet certain club standards, which might be set up in different ways. One possibility would be to set outcome standards while another possibility is to tie the standards to certain processes members should adopt. A third option is to include only actors that already have met specific environmental standards. While stringent

[10] Private benefits are individual gains subject to each member (Prakash & Potoski, 2007, p. 776).
[11] Shirking happens when members avoid or neglect their duties.

club standards can encourage members to contribute considerably more to social welfare than what public law requires them to, leninent club standards only help generate marginal social externalities beyond the legal requirements. Clubs using stringent standards can thus be labelled as high cost clubs and face fewer difficulties in differentiating between actors lagging behind and the ones capable of complying with the club requirements. In effect, the stakeholders are in the position to reward and punish actors for their performance.

Prakash and Potoski (2007) urge policymakers to consider the policy context and the type of actors they wish to include when they institutionalise club standards and enforcement mechanisms. A club with lenient standards is preferable if policymakers wish to attract a wide range of members. But club standards that are too relaxed can reduce the "branding benefits" of club membership and thus discourage actors from joining the club (Prakash & Potoski, 2007, p. 781). Their work examines the optimal club size and the possibilities of crowding despite non-rivalrous benefits. Overall, Prakash and Potoski (2007) argue that a club approach is to prefer over unilateral action due to a higher credibility level following from the actors' limited ability to change the rules by themselves.

Zelli et al. (2010) have analysed the effects of fragmented climate governance architectures on the effectiveness of policies according to four factors: speed, ambition, participation and equity. Fragmented governance architectures are characterised by overlapping issues, international institutions, constituencies (public and private) and reach (e.g. global or regional). Starting out with speed, fragmented architectures can indeed prove to be prompter in concluding negotiations and enforcing agreements. However, the authors argue that despite early successes in agreements of this kind, it may prove harder to motivate other countries to join because the agreement already has been built on the interests of the founding members. Moving on to the second aspect of ambition, adopting a "narrow-but-deep" rather than a "broad-but-shallow" approach can in fact prove to be more productive (Zelli et al., 2010, p. 28). In a setting like this, side-payments can be easier to establish seeing as national governments only bind themselves to one other country instead of a larger group. Barrett and Stavins (2003, p. 360) define a side-payment as "a direct money transfer made by one party or a set of parties to another". It is important to note that Zelli et al. (2010) deploy a broader definition of side-payments and include transfer of technology and political support in other international organisations as well as trade concessions. In section 5.3.2 I outline the underlying idea and utility of side-payments.

The second factor deals with the ambition of climate policies. Economic studies suggest that in the field of emissions trading, a global trading scheme (e.g. the Kyoto Protocol) is more capable of fostering the necessary cutbacks in emissions compared to other alternatives that are more fragmented (e.g. formal or informal linkages of regional trading systems). The scholars state that a fragmented architecture "that do not unite all major actors in one coherent and consistent regulatory framework and that include conflicting norms and principles are likely to send confusing messages to all, reducing the overall performance of the system" (Zelli et al., 2010, p. 29). Thirdly, a fragmented system is more accessible for relevant actors and sectors (e.g. from private industry and business) to participate in than a static system. Lastly, the degree of fragmentation might negatively affect the agreement's equity concerns. Similar to Victor's (2011) proposal, other scholars have also focused on the possibilities inherent in a bottom-up approach of better accommodating the interests of various states. As experienced in previous climate negotiations, states have conflicting beliefs about which values international regulations should be based on. Whereas a fragmented regime that is adapted to countries' differing interests might better ensure higher compliance rates among members, it can also run into problems concerning equity. Cooperation theory indicates that powerful states possess an unfair amount of bargaining power in bilateral and small-n agreements compared to large-n agreements where smaller states have the possibility of entering into coalitions to secure their interests. A governance architecture that is labelled unfair usually struggles with legitimacy issues, which in turn harms the system effectiveness. In their conclusion Zelli et al. (2010) argue that despite certain problems in theory, a fragmented governance system is a second best option to "purely universal governance architectures" that in many cases are unlikely to function effectively in real life. Section 4.4 deals with the political legitimacy of conditional commitments and more generally touches on the overall legitimacy of a climate club.

3.3 Existing "Climate Clubs"

Several reviews of existing clubs' abilities to produce transformational change and raise ambition in climate action have been made. Weischer et al. (2012, p.177) have mapped the current landscape of "climate clubs" and found that all 17 of them only support incremental change. They define a climate club as a group consisting of more than two countries but with fewer members than the amount of signatories to the UNFCCC. Also, a club differs from an

international organisation because it is less institutionalised and administered by national governments. Weischer et al. (2012, p. 178) define a transformational climate club as one that manages to produce "emissions reductions in line with what climate science suggests is needed to avoid dangerous climate change". In order to do so it has to include the most relevant actors. A country is characterised as relevant on the basis of its political and strategic (leader within a region); economic (major producer or consumer); or symbolic (e.g. a state being especially vulnerable to climate change impacts) position.

Andresen (2014) provides an assessment of the effectiveness of the Asia Pacific Partnership on Clean Development and Climate Change (APP), the Major Economies Forum on Energy and Climate (MEF) and the G20, in addition to a few other similar forums. The ability of these exclusive approaches to promote problem-solving effectiveness in a legitimate manner is examined in comparison to the output, outcome and impact caused by the UNFCCC. The article establishes that even though the bottom-up exclusive approaches have proven themselves as viable alternatives to the UN track, the effectiveness of these regimes are yet to be fully measured. A crucial point in the top-down versus bottom-up debate is the issue of legitimacy, which the UN scores high on. The forums subject to Andresen's analysis acknowledge this fact and a club that would challenge the UN's position within climate governance may face problems with legitimacy, an observation supported by Zelli et al. (2010).

Having ruled out existing clubs as institutions able to promote transformational change, I turn to Victor's (2011) proposal of a new type of climate club. Contrary to Weischer et al's (2012) idea of bringing back the ambitions of a climate club to the UNFCCC, Victor believes that a club approach should replace the global negotiations under the UNFCCC.

3.4 "Carbon Clubs"

Victor's (2011, p. 242) concept of "carbon clubs" provides a detailed explanation of why and how a club theoretical framework should be applied in mitigation efforts. The proposition is based on his understanding of why the climate negotiations up until now have been stuck in a global warming gridlock. He supports Barrett's (2007) argument that the nature of the climate change issue causes extraordinary cooperation problems but stresses that policy makers should focus on what they can actually change: namely developing new policy

strategies. Uncovering myths related to the role of science, environmental diplomacy and technology for addressing global warming is presented as a step towards breaking the gridlock. Victor contradicts the idea that an effective climate agreement has to adopt a top-down approach based on global goals that are agreed upon by the scientific community (such as limiting warming to 2°C). International treaties are believed to merely result in governments agreeing on "the lowest common denominator"(Victor, 2011, p. 6). Instead, Victor promotes a bottom-up approach that focuses on what policies governments are able and willing to implement in order to control emissions.

Victor's theoretical contribution emphasises that enthusiastic countries should take the leading role in order to motivate reluctant countries to control own emissions. Victor (2011, p. 242) envisions a "carbon club" as an institutional setting where enthusiastic countries can agree on complex deals while simultaneously producing club benefits that can function as incentives for reluctant countries to join the club. After joining the club, the new members would then have to negotiate their own accession deals. Victor (2011, p. 244) terms these deals "Climate Accession Deals" (CADs) and uses the WTO accession process as a model for how states can bid and negotiate such conditional commitments. The myth that global warming is an environmental problem comprises Victor's justification for leaving the UN track and turning to the WTO model for inspiration. He argues that the application of an environmental and not an economic perspective has led to failed attempts of tackling global warming based on earlier successful environmental diplomacy efforts (e.g. the Montreal Protocol).

Victor (2011) defines enthusiastic countries as the countries willing to use own resources in mitigation efforts. The section on conditional commitment provides a discussion of the prospects for negotiating CADs and which states are able to craft commitments with enough leverage to induce other countries to follow suit. Victor investigates the various measures enthusiastic countries can adopt, most notably emissions trading. His suggestions are further addressed in the section on club goods, as are his models on how states can cooperate on technology policies.

Reluctant countries on the other hand do not treat emissions reductions as a national interest of high priority. The essence of Victor's argument is that enthusiastic countries should set up incentives (both positive and negative) that are strong enough to make reluctant countries re-

prioritise their national interests by including emissions control. It is of high importance to motivate the group of reluctant states seeing as these are expected to account for the majority of carbon emissions in the future. Table 3.1 lists the enthusiastic and reluctant countries as proposed by Victor.

Enthusiastic countries	Reluctant countries
United States	China
European Union	India
Japan	Brazil
Canada	Indonesia
Australia	Korea
	South Africa
	Mexico
	Taiwan

Table 3.1: Victor's categorization of enthusiastic and reluctant countries. [12]
Source: Victor (2011, p. 10).

Victor (2011, p. 10) does not include "countries that are large carbon exporters and under little public pressure to regulate emissions, such as Russia and the largest OPEC members". Furthermore, he also excludes smaller, low-income developing countries. These states account for small emissions and simply do not have enough resources to address global warming. In other words, they are not reluctant to participation but rather unable to take part in mitigation efforts. Because a climate club's long-term goal is to include as many states as possible, I nevertheless focus parts of my analysis on how club benefits can be installed to accrue to smaller, developing countries as well.

3.5 Summary

First, the chapter presented game-theoretical understandings of climate negotiations and provisions of global public goods. I agued that a club approach can promote a transformation of the climate change mitigation game into a coordination game for club members. Second, I

[12] Victor (2011, p. 10) includes "other enthusiastic countries" as a group but does not inform the reader of which countries these are. He merely shows how they account for a smaller share of global GHG emisions than the other enthusiastic countries.

presented general club theory and focused on two main models: “the Buchanan model” and “the Voluntary Clubs model”. Third, I assessed how fragmented climate governance architectures might have implications for the effectiveness of policies. Fourth, the chapter presented previous research on existing climate clubs, which revealed that none are able to bring about transformational change. Lastly, I introduced Victor’s idea of “Carbon Clubs” and focused on the background for and design of his proposal.

To conclude, the attributes of the global warming issue combined with critiques of the UNFCCC lay the ground for applying club theory as an alternative approach. By ruling out the prospects of existing climate clubs bringing about transformational change in mitigation efforts, Victor’s proposal of how a carbon club should be set up demands further attention. Chapter four constitutes the first part of my analysis and concentrates on using conditional commitments to induce reluctant countries to follow suit.

4 Conditional Commitments

I now turn to conditional commitments as a potential incentive a climate club might use to solve the problem of free riding and conduct successful mitigation. In this chapter I examine the following question: *Under which conditions can conditional commitments by enthusiastic countries induce reluctant countries to follow suit?* As seen in chapter two, repeated games (typically based on the Prisoners' Dilemma) have been applied to study how cooperation might be enhanced in global climate change negotiations. According to Underdal et al. (2012, p. 478) this strand of research sees "contingent strategies", such as conditional commitments, as an instrument to promote mutual reciprocity and cooperation within an international anarchic setting. A leader's attempt to create a coordination game for its followers can potentially help solve a Prisoners' Dilemma.

The idea of conditionality in international politics has produced a range of different concepts. Victor (2011, p. 243) uses the concept "contingent commitments" to describe Climate Accession Deals (CADs). Throughout my paper I apply the concept "conditional commitments" to refer to agreements based on reciprocity in a climate club. The EU's 20-20-20 policy is the most prominent example of a conditional commitment within the field of international climate cooperation. The EU launched emissions reduction targets and a promise to top up its contribution if other major actors were to respond with similar targets. The conditional commitment did not succeed and I examine the EU's failure to induce its followers to introduce similarly ambitious emissions reductions. The concept of contingency is more complex and intricately established in Victor's CADs than in the conditional commitments launched by the EU. Arguably, CAD model is more relevant for a club approach and the possibilities of establishing a climate club by such conditional offers is further investigated in this chapter.

The chapter provides a discussion of the necessary conditions for a proper functioning of conditional commitments as incentives launched by enthusiastic countries. The analysis utilises Helland et al.'s (2015) framework of such conditions. Their experimental research concludes that conditional commitments might enhance climate change cooperation and has the potential of turning the dilemma game into a coordination game. But conditional commitments do not fully solve the collective action problem that typically threatens mitigation efforts and actors seem to only make limited contributions. The effect of

conditional commitments varies according to the leader's leverage, the leader's credibility and whether coordination among the followers succeeds. Lastly, I expand on Helland et al.'s (2015) framework by adding legitimacy as a fourth condition. The purpose of chapter four is thus to examine the conditions under which conditional commitments might work in order to gain knowledge about which settings that can induce climate change cooperation.

4.1 Credibility

First of all, Helland et al. (2015) maintain that a successful conditional commitment hinges upon its credibility. For a promise to be credible, the followers need to trust that the leader is willing and capable of upholding its promise in the event that the followers are able to deliver on the condition set by the leader. Furthermore, parties to the agreement must be able to trust that only actors committing themselves to the emissions reductions at hand will reap the benefits from this commitment and that every actor gains from the leader's enhanced policies (Hovi et al., 2015, p. 12). For a promise to be fully credible it has to be binding according to the authors, which is challenging in international climate cooperation with climate clubs being no exception. In this section I analyse the credibility of the EU's 20-20-20 plan and assess the forms of contingency proposed by Victor (2011).

4.1.1 European Climate Leadership and Political Will

Focusing on specific conditional commitments in the field of climate change mitigation, the EU's 20-20-20 policy plan did not manage to bring about any considerable emission reductions. Why? In the next two sections I outline key aspects of EU's climate and energy package for 2020 and examine to what extent the conditional commitment was perceived as credible.

Early in 2007, the European Council promoted quantified emissions reduction targets in order to reach its objective of keeping the global average temperature below 2°C (Council, 2007). The proposal was included in "Europe 2020", the EU's 10-year strategy launched by the European Commission 3rd of March, 2010 (European Commission, 2015). In the climate policy strategy, the EU made a conditional commitment of reducing own GHG emissions by 30 % (compared to 1990 levels) within the year 2020 provided that other developed countries followed suit (European Commission, 2007; Council, 2007). The EU nevertheless committed to a 20 % emissions reduction in the event its conditional promise was not responded to.

Additionally, the EU stated that they would increase energy efficiency by 20 % and aimed at a renewable energy share of at least 20 %. The Commission stated that they would achieve their goal partly through the EU's emissions trading scheme (EU ETS) and by implementing a carbon capture and geological storage policy (CCS). In addition to the measures proposed by the Commission, the goals have been restructured into national objectives for each EU member state. As a condition for raising their target to 30 %, the EU expected that developed countries as a group reduced their emissions by 25 to 40 % by 2020 whereas developing countries as a group should set their reduction targets at 15-30 % by 2020 (Council, 2009). The conditions for the conditional commitment have not been met considering that no new climate agreement with binding emissions reductions has been agreed upon. It is worth mentioning that the EU's climate and energy policy for 2030 does not contain any conditional commitments. However, the targets have been raised to 40 % for emissions reduction and 27 % for energy efficiency and renewables (Council, 2014).

When launching its 20-20-20 plan, some argued that the EU managed to close a gap that had previously existed between the EU's international commitments and its implementation of ambitious European climate policies (Oberthür and Kelly, 2008, p. 39). Arguably, the climate policies implemented by the EU in the 1990s were largely founded in a self-interested desire to strengthen and develop its foreign policy (Skodvin and Andresen, 2006, p. 22). In short, the EU's attempts to establish itself as a climate leader after the U.S. withdrawal from the Kyoto Protocol entailed significant political benefits and little economic costs. Still, EU attempts to encourage states to join the Kyoto Protocol did not succeed. First of all, the ambitions of the Kyoto protocol had been drastically lowered from the initial outline and secondly the EU did not manage to induce the United States and other major emitters to reciprocate. In fact, the EU failed to meet its own Kyoto targets. However, with the new climate and energy package and an increased focus on providing a collective good, the EU has seemingly adopted a directional leadership style. Directional leadership can be defined as unilateral action, either "by influencing other parties' incentives by making the first move" or "by demonstrating the pre-eminence of particular solution alternatives" (Skodvin and Andresen, 2006, p. 14). With its climate and energy package for 2020 the EU has indeed demonstrated a willingness to take on ambitious mitigation policies despite high economic costs. Their new directional leadership style has nevertheless not managed to induce other actors to sufficiently reduce their emissions. It seems that followers did not trust that the EU

was capable of upholding its promise. The next section probes into possible causes for this perception.

4.1.2 Barriers for Domestic Implementation

Besides political will, Underdal et al. (2012) introduce barriers for domestic implementation as another factor affecting the credibility of a conditional commitment. The authors have assessed under what conditions a conditional commitment by the EU can successfully induce the United States, China, India or Japan to follow suit. Involving these states in mitigation efforts is pivotal as their total GHG emissions account for three fifths of global emissions. Underdal et al. (2012) examine how a state's mitigation costs are affected by emissions reductions carried out by other actors (see section 4.4). This effect is measured by simulating the changes in welfare if one of the actors move from their business-as-usual baseline policy to an enhanced policy as outlined in a conditional commitment. Different domestic sectors are not equally affected by a state's mitigation policies and so the marginal abatement costs (MAC) [13] are not proportionately distributed across the various industries. This is relevant for explaining situations where a state refrains from implementing the enhanced policy line as demanded in a conditional commitment even though it would increase national welfare. Industries that have not been imposed MACs under the baseline policy line suffer the economic costs of an enhanced policy line and establishment of a global emissions-trading system. These industries are often in a position to lobby and pressure the government to stick to its baseline policies instead of implementing the enhanced policies as agreed to in a conditional commitment.

In the case of the EU's 20-20-20 plan, European energy producers and power-intensive industries managed to exert enough pressure throughout the legislation process to avoid the inclusion of specific sectors in the emissions reductions policies. Followers thus have reason to fear that these industries might similarly impede the EU reaching its enhanced policy target (Underdal et al., 2012, p. 484). The powerful lobbying position of these industries thus strongly harms the credibility of any conditional commitment made by the EU. What is more, putting the 30 % target into practice conflicted with the interests of a range of member states that together could block implementation with their Council votes. The Eastern European

[13] Marginal abatement costs is a term associated with environmental economics. In brief, MACs are the costs for "eliminating an additional unit of emissions" (Morris et al.,2012, p. 327).

countries protested most heavily against the enhanced policy goal as they felt it would harm EU competitiveness and their power production, which is largely based on fossil fuels.

Yet, these domestic indifferences do not necessarily have to weaken the credibility of future conditional commitments made by the EU as it is an institution capable of redistributing wealth among its member states. It could in fact compensate the Eastern European countries for potential losses in competitiveness and welfare. In this respect, for a future conditional commitment to function properly the EU would perhaps need to introduce side-payments to certain member countries. Overall, I would argue that the EU could have increased their chances of success if they had combined their conditional commitment with side-payments. However, it is worth noting that powerful economic sectors within the EU might still be able to sway these governments towards vetoing ambitious GHG emissions reduction targets.

Putnam's (1988) two-level game perspective is relevant for analysing how the international and national levels interact in negotiation processes. Bargaining at the international level depends on specific powerful interests at the national level. In turn, these interests affect countries' capability of taking the lead or of following another state's lead in mitigation efforts. The societal distribution of the costs and benefits of entering a conditional commitment for the country in question is a highly relevant factor. For this reason, a leader's attempt to induce other countries to reduce their emissions must be directed towards domestic constituents with veto power. It is precisely this line of reasoning Victor (2011) incorporates into his argument on why climate clubs remain a feasible alternative to global climate negotiations that merely introduce void targets that can be agreed on at the international level but are not attuned to domestic constituents.

4.1.3 Climate Accession Deals

The EU's 20-20-20 policy failed to induce followers to respond positively. The discussion on the EU's conditional commitment suggests that the promise of a 30 % reduction was not perceived as credible enough, largely due to domestic pressure from powerful industries that would experience considerable economic losses in the event that EU acted on it's promise. This section looks into the credibility of Victor's CAD model. Arguably, Victor's (2011, p. 247) concept of Climate Accession Deals (CADs) provides a more general model of how credible conditional commitments can be installed in a club setting. With its many veto

points, the EU's decision process is not representative for other potential club members. The conditional commitments are adjusted to every club member's capabilities and interests and the form of contingency differs from case to case. The idea is that club members provide different offers of technology, favourable conditions of trade and investment and linkages to emissions trading schemes among other possible club goods (Victor, 2011, p. 261). The offers made by reluctant nations could be combined with demands for external assistance, e.g. side-payments. Overall, Victor adopts a more holistic take on how contingency should be incorporated in a climate club and envisions club goods as *part of* the negotiations on conditional commitments. Victor envisions governments launching these bids to gain access to the climate club, as they have the best knowledge about which policies that can actually be implemented. It thus increases the chances of implementation and enhances the credibility of such conditional commitments. It differs from the EU's conditional commitments in the sense that a leader does not set a condition that others should join. Instead, each country applying for membership negotiates their entry conditions with existing club members. Conditional commitments can thus be viewed as a formalisation of the entry conditions agreed to by each member country. Still, Weischer et al. (2012, p. 191) underscore that members should agree on a "shared vision", more specifically long-term ambitious goals. These could be targets for emissions reductions, energy efficiency, shares of renewable energy, or setting a cap on number of fossil fuel subsidies (Weischer et al., 2012, p. 191). It is essential that the entry conditions "strike the balance between leaving participation open to a large enough number of countries for the club to have an impact and setting some standards that ensure that the club actually encourages more ambition" (Weischer et al., 2012, p. 191). Section 5.1.2. examines specific challenges associated with doing so.

The CAD model opens up for many different forms of conditional commitments. For countries having problems with implementing climate policies with long- term effects, the solution might be time-limited conditional commitments with an offer to top up. Such agreements could be crafted similarly to the EU's 20-20-20 plan (Victor, 2011, p. 246). States with fairly new political institutions belongs to this group, as their governments may not be in an authoritative position to introduce targets for the next 50 years. For countries such as the United States facing a slow and complicated legislative process fraught with a range of veto possibilities, the form of contingency should be different. U.S. ratification and implementation of international agreements is a circumstantial ordeal. The president is in a position to negotiate agreements but needs the "advice and consent" of the Senate, which

requires a two-thirds majority in the Senate to ratify them (Bang and Skodvin, 2014, p. 86). The implementation of the agreement furthermore depends on the Congress because the provisions of the international agreement need to be instituted as new federal legislation, often referred to as "enabling legislation" (Bang & Skodvin, 2014, p. 86). In other words, international agreements face challenges at the ratification stage as well as in the process of law adaptation. However, at the end of this process the provisions have the same status as federal law, thus facilitating more effective domestic enforcement of the agreement's provisions than in many other states. In a climate club the U.S. government could itself bid conditional offers of mitigation measures that better reflected the chances of ratification and implementation at home, thus making them more credible. One possible way of doing so might be to focus on direct regulation and state policies. According to Victor (2011, p. 11), these are areas where the United States have already made efforts of introducing more ambitious climate policies.

Next, a central issue in regards to credible promises is assessment. Enthusiastic countries are proposed to lead by example and be open for reviews of their conditional commitments (Victor, 2011, p. 261). The idea behind reviews is to "shine a spotlight on which national policy proposals are the most credible and thus make it easier for governments to negotiate contingent deals" (Victor, 2011, p. 247). Additionally it simplifies enforcement. Victor's suggestion resembles that of the "pledge and review" approach that the Japanese government promoted in the beginning of the 1990s (2011, p. 262). Unfortunately, Japan's proposition was not properly acted upon partly because the Japanese government did not manage to demonstrate the utility of a pledge and review system. The concept stands in contrast with climate negotiations' usual focus on targets and timetables. In short, the idea involves countries making pledges on specific emissions control measures for which they are subject to frequent reviews. Hence there are no major or enforceable repercussions for not complying with the pledges but by not fulfilling their stated efforts, states loose their good standing with the other parties to the agreement (Tingley and Tomz, 2014, p. 364).

The Copenhagen accord built on the pledge-and-review concept but failed to establish an institutional setting that could facilitate cooperation on the various countries' pledges. According to Victor, CADs induce countries to raise their efforts because the pledges made by each government are collected and bargained upon in larger package deals. He contrasts these with the CDM, which functioned only as a "one-off deal(s) with no vision for the

future, creat(ing) perverse incentives for reluctant nations to avoid sensible policies, including putting a positive price on carbon" (Victor, 2011, p. 259). Furthermore, CADs would not be prone to the same enforcement problems as the voluntary Copenhagen pledges (see section 2.4) because the promises governments make in the transition process towards club membership are eventually tied up to the access of club benefits.

Overall, under the right circumstances a club approach can increase the credibility of a conditional commitment because the pledges made by each government are more attuned to the capabilities of the state to deliver on the emissions reductions targets. This is partly because the interests of certain sectors and domestic disputes are already dealt with. In this way, the followers are in a better position to trust that the leader is both willing and capable of keeping its promise. However, it all depends on the state launching the promise. Examining the failure of the EU to incentivise followers by its conditional commitment suggests that the CAD model is more suitable for guiding similar endeavours within a climate club. Future conditional commitments launched by the EU should be better fitted to each key actor instead of simply outlining one target for developing countries and one target for industrialised countries. By combining incentives tailored to each follower, the prospects for success would improve significantly. Most notably, side- payments can help solve domestic political indifferences that may threaten the credibility of a commitment.

4.2 Leverage

A second condition affecting the ability of conditional agreements to produce favourable outcomes concerns the leader's leverage (Helland et al., 2015). In order to induce followers to reduce their emissions, the promise must make reducing emissions worthwhile in terms of cost-benefit analyses. In effect, the leader's leverage depends on the balance of the leader's promised contribution and what is demanded in return from the followers. When the leader demands substantial contributions from the followers, the leader's contribution also need to be of considerable size in order to induce other countries to reduce emissions. In either case, the leader needs to be sufficiently resourceful to be capable of launching a significant promise to its followers (Helland et al., 2015). Simulations performed by Underdal et al. (2012, p. 485) indicate that the United States is the main actor least sensitive to mitigation carried out by others. The result suggests that United States gains more from implementing its baseline policies than introducing its enhanced policy even if all the other main actors do

the same. If this proves to be the case it might be difficult or even impossible for a leader to introduce a promise that could effectively alter the cost-benefit analysis of the United States while simultaneously not jeopardising the welfare of its own citizens. According to simulations carried out by Underdal et al. (2012, p. 485), EU's conditional promise of reducing emissions by 30 % would have to be modified to a 65 % reduction before the United States could start benefitting from taking part in the conditional commitment. If their simulations turn out to be correct a depiction of real life climate negotiations, it is crucial to install club activities and policies that might generate sufficient benefits to the United States. It must be kept in mind that enthusiastic countries are also dependent on access to significant club goods as a reward for willingly using own resources to combat global warming.

4.2.1 The Threat of Carbon Leakage

In the event that the leader only has enough leverage to induce a handful of followers to participate, main actors that choose not to respond to the conditional commitment face incentives for *increasing* their emissions. This process is called carbon leakage, or emissions leakage, and are essential for explaining attempts of climate change mitigation that end up producing an outcome completely opposite of what is aimed for. Also, the risks of carbon leakage weaken incentives for installing green technology. Thus, carbon leakage ultimately poses a serious threat to the provision of mitigation as a global public good.

Carbon leakage consists of two different economic mechanisms (Maria & Werf, 2008, p. 56). The first is the terms-of-trade effect, which happens because states that have introduced emissions reduction measures face more costly productions of energy intensive goods and become more sensitive to imports from states that still base their production on large GHG emissions. As a consequence, prices of such goods rise and non-participants to the climate agreement gain competitive advantages in the international market. The second mechanism is called the energy-market effect and relates to the slump in carbon prices due to lowered demand of fossil fuels in countries that implement reduction measures. It then becomes beneficial for states that are not subject to emissions reduction policies to substitute other energy sources with fossil fuels. The latter effect benefits net importers of fossil fuels, while harming net exporters. An example of the energy-market effect is the repercussions of the U.S. shale gas-revolution on the European market (McMahon, 2012). Due to the growing "fracking" industry in the United States and a correspondingly decreased demand for coal at

home, cheap fossil fuels are exported to Europe, where it ousts the use of clean natural gas. Also worth mentioning are the growing concerns for health issues and environmental damages caused by the production of shale gas, among them methane emissions. Some researchers have even described methane as more aggravating for global warming in a short-term perspective than CO_2 (Hovland, 2011). Others oppose this view by arguing that fracking may become compatible with mitigation efforts provided that the production methods improve. Data released by the International Energy Agency (IEA) show decreasing U.S. emissions as a result of shale gas displacing coal and serve as another argument in favour of using this type of energy (Wooldridge, 2012). Nonetheless, by focusing on shale gas, energy productions that are not dependent on fossils at all might be under- prioritised (Seip, 2013). Overall, both of the economic mechanisms associated with carbon leakage contribute to a global increase of GHG emissions. Carbon leakage can thus indirectly be the result of unilateral action taken by a leader that does not have enough leverage to induce others to follow.

The challenges associated with carbon leakage add to the importance of setting up a climate club with club goods that are significantly attractive for new club members and thus counteract carbon leakage by broadening participation. By doing so, a climate club would increase the leverage of its conditional commitments and thus induce reluctant countries to join. Indeed, Maria & Werf (2008, p. 57) hold "directed technical change" as crucial in order to address the terms-of-trade effect. Barrett and Stavins (2003) propose trade instruments, such as a border tax, to prevent emissions leakage but recognize the many obstacles towards including such instruments in a climate agreement. In Chapter 5 I investigate how members of a climate club can collaborate on technology transfers. I also discuss the possibilities of institutionalising mutually advantageous terms of trade and investment as club goods. Additionally, the chapter provides a discussion of under which conditions trade instruments can be used as sticks.

4.3 Coordination

Helland et al. (2015) introduce coordination among followers as a third condition moderating conditional commitments' ability to enhance cooperation. The condition is closely connected to each actor's response to the leader's promise and its chosen contribution. Difficulties in fulfilling the third condition are held to be the main reason why conditional commitments

alone are incapable of solving the collective action problem. Coordination naturally depends on which state that would hold the role as leader. Underdal et al. (2012) focus their study on key actors to include in a conditional commitment, namely the EU, China, India, Japan and the United States. They all benefit from emissions reduction measures implemented by one of the other major emitters as it decreases concentrations of GHGs globally. In order for the conditional commitment to take effect and induce actors to implement their enhanced policies, it is essential that the followers are able to coordinate their efforts and meet the condition set by the leader. However, the condition can be met in several different ways. The size of an actor's contribution does not only depend on the leader's promise but also on the contributions given by others. If the leader outlines the average follower contribution it might be rational for actors to free ride and hope that the contributions made by others are sufficient for the leader to implement his promise. Similarly, the incentive to free ride can be present if the leader only provide a minimum contribution for followers as the actors would lack information and reassurance that others also follow up on the leader's promise.

Helland et al. (2015) argues that successful coordination between followers partly depends on whether the benefits of the public goods provision are equally shared. This is usually not the case and has resulted in states advocating conflicting normative principles about how the burden sharing of global mitigation measures should be set up. Scholars have argued that the varying contribution norms are applied by states as part of their own self-serving bias. Bernauer, Gampfer and Landis (2014, p.46) list a range of principles related to mitigation: individual equality; economic equality; national grandfathering; historical responsibility; current responsibility; historical economic benefits from emissions; economic capacity; and cost-benefit analysis. The authors examine to what extent public support for a state's climate policies depends on principles of fair burden sharing. Surveys indicate that both normative and utilitarian (economic) considerations matter in this respect. Generally speaking, the industrialized countries would be allocated the biggest share of the burden regardless of the principle applied but because the outcomes vary to some degree these principles tend to cause major and insurmountable disputes during climate change negotiations. However, there are some cases where the outcome differs substantially for some countries. Most notably, the economic consequences for China vary considerably according to whether an agreement is based on historical or current emissions. Also, per capita emissions matter in this respect as discussed later on.

Emissions trading is a proposed mechanism for equalizing the costs of mitigation among followers. Underdal et al. (2012, p. 481) envision a ”regime of perfect coordination” as a situation where the major emitters all adopt their enhanced policies and cooperate through an international emissions trading scheme. They argue that through emissions trading states are able to share the marginal abatement costs and thus increase their efficiency gains, thereby making it less expensive for actors to deliver on their outlined policies. In fact, it seems a state only benefits from implementing its enhanced policies if all the other actors reciprocate *and* marginal abatement costs are equalized. However, the discussion in section 5.1.3 reveals that emissions trading alone might be insufficient for equalizing MACs and in fact involves a global shift in wealth. Furthermore, Underdal et al. (2012) recognize the political challenges of including both the United States and China in a regime like this. The dispute between these two major emitters about how to tackle global warming demonstrates how self-serving bias influence the norms states invoke. Previous climate negotiations have been marked by disputes between China and the United States concerning the size of each state's contribution to mitigation efforts. Even though the United States is characterised as an enthusiastic country, it still would have to coordinate its efforts with other followers to meet a leader's condition, provided it does not itself take on the leading role. For this reason the next section looks into the prospects for bringing together American and Chinese interests.

4.3.1 Coordinating U.S. and Chinese Mitigation Efforts

Climate change cooperation has continually been hampered by the United States and China's inabilities to agree on the terms for their reciprocal relationship. Their indifferences are equally demanding for the prospects of a conditional commitment succeeding, both in terms of the two states coordinating their efforts in order to respond to a leader's promise and with regards to one of them taking on the leading role. The Byrd Hagel resolution, as mentioned in chapter 2, makes the United States' mitigation efforts contingent on the behaviour of other states (Senate Resolution 98, 1997). The resolution clearly states that the United States shall not ratify the Kyoto protocol or any other agreement obligating the country to reduce own emissions *unless* other major developing countries do the same. Their stance is rooted in economic considerations and channels a fear that large emissions reductions that are not reciprocated by major developing countries will be unbeneficial for the competitiveness of American industries (Asselt and Brewer, 2010, p. 42).

Similarly, China argues along the same lines: namely that they will not commit to any binding emissions reduction targets before the United States has agreed to implement such measures (Hovi et al., 2013). The Chinese government has time and again been reluctant to agree to any quantified emissions reductions targets. The Chinese Communist Party (CCP) tends to be cautious about promising the Chinese people concrete outcomes if they are not completely confident that they are able to deliver on such targets, as this might jeopardize their political legitimacy (Conrad, 2012, p. 443). Keeping in mind that China is currently responsible for 29 % of global CO_2 emissions and that the U.S. share amounts to 15 % (with numbers constantly changing), it is crucial that both countries join a potential climate club in order for the organisation to achieve any significant emissions reductions[14] (Olivier et al., 2014).

The deadlock in U.S.-China relations has raised concerns about any climate change agreement being able to, whether directly or indirectly, solve these indifferences about fair burden sharing and historical responsibility. The changing pattern of China's energy consumption is a relevant aspect of the debate on which norms that should guide the distribution of responsibilities. Indeed, China's changing energy use the previous decade suggests that the country's role as an advocate for "common but differentiated responsibilities" for Annex I and Annex II countries is out-dated (Conrad, 2012, p. 442; United Nations, 1992, p. 2). Conrad sees China as having developed a "dual status as a developing country and a major emitter" (2012, p. 454). China surpassed the United States as the world's largest energy consumer in 2009 and data also show that the energy use per capita has increased to the same level as the global average use per capita (IEA, 2010). Still, Chinese citizens' energy use is only one third of the average OECD per capita consumption. China can thus be inclined to advocate historical responsibility and emissions per capita as guiding principles for fair burden-sharing.

On the other hand, China has followed up its increased energy use with ambitious domestic climate policies. China's change of course is motivated by a range of different factors: vulnerability to climate change, energy security, international reputation and most prominently a focus on finding new models of economic growth (Conrad, 2012, p. 438). This is evident in a range of national programs and strategies that outline political goals of

[14] The global CO2 emissions data are collected by the PBL Netherlands Environmental Assessment Agency for the year 2013.

increasing renewable energy use and energy efficiency. By doing so, China becomes increasingly self-sufficient in its energy supply, which improves energy security. Furthermore, it is a politically valuable goal as China becomes less dependent on fossil fuels from other states. In addition, the Chinese government has recognized increasing GHG emissions as a serious threat to public health and security, especially for children (Wong, 2013b). These issues have lowered people's trust in the government and many choose to emigrate for the sake of their children's health. The largest cities are ranked at the world top when it comes to levels of air pollution (Wong, 2013a). Conrad (2012) holds the main reason for China's altered policies to be the issue's threat towards economic growth and social stability, making mitigation a political priority for the CCP. The party's legitimacy rests upon their ability to secure prosperity and good living conditions to large parts of the population. Overall, the social, economic and political benefits of transitioning to a low-carbon economy seem to have outweighed the costs of implementing such climate policies.

However, recent developments suggest at least moderate progress for the U.S.-China relationship in mitigation matters. First of all, the newly founded U.S.-China Strategic and Economic Dialogue (S&ED) signals prospects for cooperation (U.S. Department of State, 2014). The working group conducting its work was established in 2013 and facilitates cooperation on emissions reductions from heavy- duty and other vehicles; carbon capture, utilization and storage; and collection of GHG emissions data among other issues. Overall, the dialogue promotes information sharing and technology exchange between the two super powers. The U.S. Government coined the emissions reduction targets agreed upon by President Obama and President Xi Jinping 11th November 2014 as a "milestone in the United States- China relationship" (Kerry, 2014). Despite the fact that this is the first we have seen of China introducing quantified targets for their emissions reductions, U.S. implementation of the agreement is politically infeasible. As has been established, the party political tug of war in Congress to pass bills reduces the chances of translating Obama's promises into policies. What is more, with only two years left in office it is unlikely that Obama's successor will follow up on this ten-year commitment (Aftenposten, 2014). To demonstrate, the current Senate majority leader, Mitch McConnell, proclaimed that the Republicans intend to give Obama's energy politics tough resistance (O'Keefe et al., 2014). Even though the Republican Party is not in a position to block the United States- China agreement altogether, there are certain ways to block implementation of policies introduced by the Environmental Protection Agency (EPA), which put limits on GHG emissions from power-plants. According to some

sources, a potential way of doing so is by "passing language that would give states the option of not complying with the EPA mandate until litigation on the issue is resolved, or that would bar federal authorities from enforcing the rule" (O'Keefe et al., 2014).

Victor's classification of the United States as an enthusiastic country and China as a reluctant one can be questioned, as neither countries have ratified the Kyoto Protocol. Victor defends his categorization by arguing that the United States has shown greater efforts to address global warming, demonstrated by ambitious climate policies introduced at state level. The lack of commitment to binding emissions targets is pinned to the deadlock in federal policy-making (Victor, 2011, p. 11). Different from the United States, Victor (2011, p. 11) labels China as a reluctant country because it does not "put global warming high on the list of national concerns, (it) won't do much to control emissions except where those efforts coincide with other national goals". Although China has partly lived up to this image in COP negotiations, addressing the issue of climate change has now become of great national concern. The Chinese government has also introduced quantified targets for their emissions reductions through the S&ED. However, targets need to be implemented and this is where a club approach comes in. A climate club can provide better opportunities for China to participate in global mitigation efforts while simultaneously looking after national priorities. To illustrate, China's need for green technology collaborations and expertise from developed countries make it in their interest to participate in a climate club (Conrad, 2012, p. 441). Indeed, involving China in a climate club can "alleviate developed countries' doubts regarding China's willingness and capability to comply with commitments" (Conrad, 2012, p. 455).

To sum up, it is crucial that followers coordinate their efforts in order to meet the condition set by the leader and hence hold the leader to its promise of topping up its contribution. In this section I directed my attention to the possibilities of coordinating American and Chinese mitigation efforts in a climate club because it is claimed to be one of the biggest obstacles for reaching a directly or indirectly effective climate agreement.

4.4 Legitimacy

In addition to the conditions introduced by Helland et al. (2015), I look into legitimacy as a fourth condition for conditional commitments' ability to successfully motivate reluctant

countries to join in on mitigation efforts. Political legitimacy refers to the level of support from political elites and the public. In the end, the stability and longevity of a climate club depends on high levels of support. Even though the main idea of establishing a climate club is based on an open membership-policy and broad participation, its first stages would necessarily bear the markings of a fragmented, minilateral regime consisting of a few powerful actors. In this section I examine in which ways a lack of political legitimacy might jeopardize the feasibility and stability of conditional commitments.

Gampfer (2014, p. 98) lists three reasons why a climate club might lack political legitimacy. First of all, he argues that a club approach is not legally legitimate in the same sense as the UNFCCC process. The UN is recognized by the international community to hold a prominent position in cooperation on global issues such as global warming. Several existing clubs, e.g. the G20 and the Major Economies Forum on Energy and Climate (MEF), have emerged as a supplement to the UN process (Andersen, 2014, p. 163). In fact, in MEF discussions members continually refer to the UNFCCC principles. These forums uphold the perception of the UNFCCC as "the main and legitimate body for dealing with issues of climate change" (Andersen, 2014, p. 164). Scholars disagree on which relationship a future, transformational climate club should establish with the UN. For Victor (2011) it is crucial that a climate club is not part of the UN framework because he sees the organization as holding an unmerited position in this policy area. If the club approach were to be carried out within the structures of the UN it would be compromised from the beginning and restrained from outlining the most suited strategy. Weischer et al. (2012) advocate a way in between, namely the possibility of starting out cooperation in a smaller group and then 'bringing in' the strategy to the UN afterwards.

Secondly, Gampfer (2014) maintains that a climate club would score low on legitimacy by excluding non-members from the discussion on the appropriate measures for halting global warming. This argument does not take into account that a climate club can be based on an open-membership principle and designed to involve as many states as possible by providing sufficient incentives for membership. Indeed, Victor (2011) argues that broad membership is a necessary condition for effective climate cooperation. Including as many states as possible brings legitimacy to the project, together with shared norms and standards. In a dynamic club, states choose to join and take part in the debate. If a state nevertheless stays on the outside of the club, it would still benefit from the club's contribution to decreased global warming.

Third, Gampfer (2014, p. 98) argues that during the first stages of institutionalization the project might suffer from "domestic implementation obstacles" unless the conditional commitment receives support from the general public. In fact, surveys conducted in France, Germany, the United Kingdom and the United States demonstrate how public support for a climate agreement can vary substantially according to costs and distribution, participation and enforcement (Bechtel & Scheve, 2013). Public support decreases proportionally to the number of participants in an agreement. It is reasonable to assume that citizens expect agreements with few parties to be less effective. In other words, the level of support hinges upon the policy outcomes of the climate club. If the club fails to encourage other states to join, it suffers from a low level of effectiveness and the public most likely feels that the costs of participating outweigh the benefits. To demonstrate, a small group of states would be subject to high economic costs for taking action in mitigation matters, putting their industries at a comparative disadvantage. The main idea is that the public is able to live with a certain degree of unequal burden sharing and higher costs if the club actually brings about effective mitigation. Bechtel and Scheve's (2013) work confirms this finding. The strong linkages between legitimacy, public support and effectiveness underline the necessity of focusing attention on which countries a climate club should entice to join.

Some scholars tend to focus on economic calculations to answer the question of how many and which countries necessarily have to be part of a climate agreement in order for it to effectively mitigate climate change. Based on emissions data from 2013 there are six major emitters that would be key actors to include in a climate club. In total these countries were accountable for 70 % of global CO_2 emissions and consisted of China (29%), the United States (15%), the EU-28 (11%), India (6%), Russia (5%) and Japan (4%) (see figure 4.1) (Olivier et al., 2014). In the event that a climate club would bring its ambitions back to the UN framework, including China and India as representatives for G77 is of high political value (Underdal, 2014).

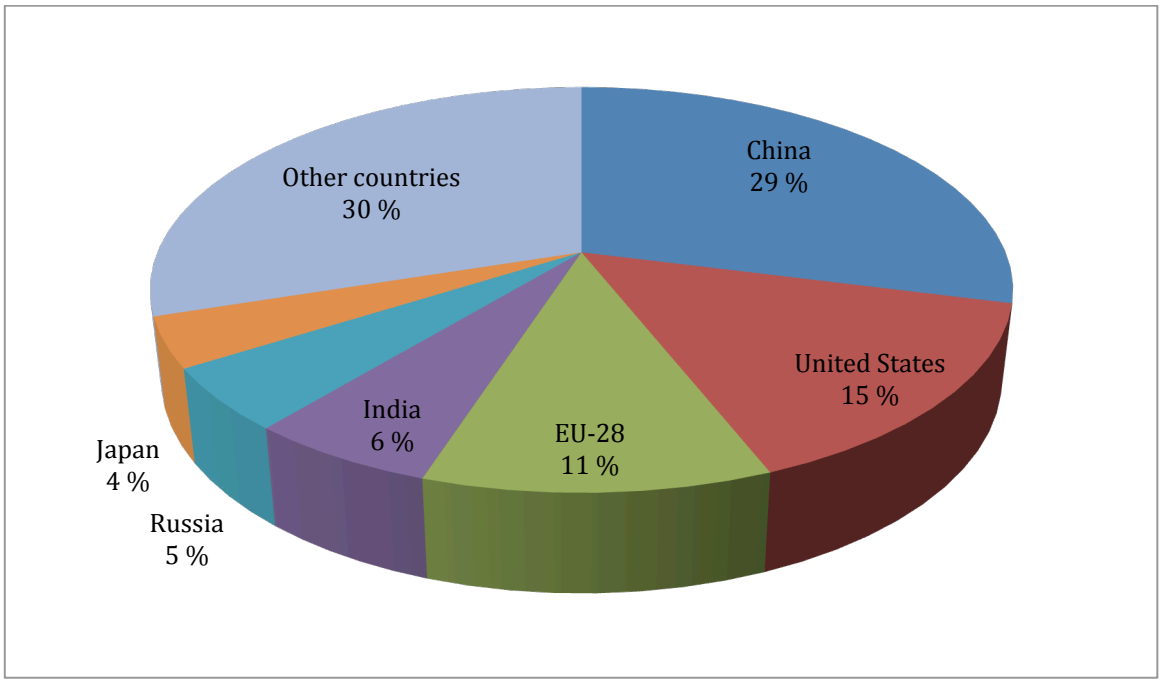

Figure 4.1: Global CO2 emissions per country from fossil fuel-use and cement production.[15] The figure shows each country's share of global emissions in 2013.
Source: Olivier et al. (2014).

Overall I would argue that the results of Gampfer's study are tainted by his assumption that a climate club would be static and his failure to include a politically legitimate dynamic club model as a possible choice in his survey. Following this line of reasoning, it is natural to assume that states that oppose other countries establishing a climate club simply dread the possibility of being induced to join and undertake unwanted emissions reductions. If this proves to be the case then setting up effective incentives is imperative. Otherwise, the outcome is merely a fragmented and small-n agreement. Furthermore, the results from Gampfer's study is not that pivotal for the overall prospects of an effective climate club as it fails to include conditional commitments as possible incentives and thus neglect to take into account how such instruments would complement the use of club goods. Low public support seems to be a bigger issue but seeing as the survey is conducted among the American public some aspects are overlooked. First of all, as a major economy the United States is necessarily not as motivated by club goods and the potential use of sanctions (both as a member and as a non-member) as many other prospective club members would be. I would argue that a more reasonable concern for non-members, which could create problems for the club's political legitimacy, would be the club's potential negative spillovers into other fields of multilateral

[15] Emissions and removals from land use, land-use change and forestry (LULUCF) are not included due to large annual variability (Olivier et al., 2014, p. 6).

cooperation. I discuss negative spillovers and possible solutions in section 5.2.1.

4.5 Summary

The discussion in this chapter may be summarised in four main points.

First, I introduced political will and barriers to domestic implementation faced by the leader as important factors affecting the credibility of conditional commitments. Studying the EU's 20-20 by 2020 policy target revealed that despite the EU's political willingness to take costly mitigation action, the leader seemed to be promising more than it was able to deliver. There is reason to believe that a CAD model could give rise to more credible conditional commitments than the EU's 20-20 by 2020 policy plan. I found that the promises made by each country in their respective CADs had better chances of being enforced if systems for assessment were in place and the promises were tied to the access of club goods.

The second condition concerned the leader's leverage. Results from previously conducted experimental research suggest that it is highly problematical to find a leader with enough leverage to motivate the United States to implement their enhanced policy line. Furthermore, I argued that a conditional commitment made by a leader that lacks leverage could ultimately produce perverse incentives for *increasing* emissions, a phenomenon known as carbon leakage. I found that club goods might under the right circumstances counteract carbon leakage by broadening participation.

The third condition entailed that followers have to coordinate their efforts to meet the leader's conditions. Coordinating American and Chinese mitigation efforts is a big challenge but a climate club would be in a better position to bring together their interests if the club benefits are attractive enough for both countries. I presented recent developments in China that have helped put climate change mitigation on the national political agenda. I argued that these events have made the country less reluctant to international cooperation on global warming.

The fourth condition dealt with the public support for and political legitimacy of conditional commitments and a climate club overall. I found that legitimacy is not an important condition for successfully applying conditional commitments as incentives. However, the political

legitimacy of a club can run into some problems if the club causes negative spillovers into other multilateral efforts to tackle climate change, which would affect non-members.

Overall, the main findings in chapter four suggest that the success of applying conditional commitments as incentives for reluctant countries is not only contingent on specific conditions but also depends on the use of club goods. Chapter five examines which conditions that pertain to the employment of club goods.

5 Club Goods

The second part of my analysis aims to investigate under what conditions club goods can induce reluctant countries to follow suit and contribute to global climate change mitigation. Club goods can take many shapes and be directed towards a range of different areas. Hence the chapter does not provide a full and detailed account of all the possible goods a climate club can produce, nor is it a comprehensive legal analysis that manages to address every potential obstacle. Instead, it gives us a better understanding of how club goods should be institutionalized in order to induce non-members to join the climate club. The analysis examines the economic and political considerations taken by politicians when crafting and implementing climate policies. This knowledge can be utilized as a starting point for finding suitable club goods and being aware of troubling issues that need to be dealt with along the way.

Although previous literature has produced an extensive range of club good proposals, I mainly concentrate on three areas that have received an especially great deal of attention: emissions trading, collaboration on green technologies and trade-related measures. The argument is structured according to Weischer et al.'s (2012) four main conditions for successfully functioning club goods. The authors envision each country crafting their own "package of incentives" according to such conditions (Weischer et al., 2012, p. 91). Instead of performing country-specific analyses of this kind I probe into challenges that enthusiastic and reluctant countries are most likely to face in attempts of fulfilling the four conditions.

First of all, club benefits have to be significant. In this section I assess whether or not emissions trading as a club good is capable of meeting the first condition. Due to several political factors it seems unlikely that a club would be able to establish an international carbon market that works as intended. Instead, it is reasonable to assume that club members would meddle with the market mechanisms and supplement emissions trading with a regulatory approach. Secondly, the club goods have to be accessible for members only. I term the second condition "exclusivity". Issues of negative spillover complicate the process of finding club goods able to meet this condition. Thirdly, all members should benefit from being in the club. The discussion under this section is characterized by issues of aligning the interests of developed and developing countries in ways that are acceptable for club members. It touches upon the possibility of applying side-payments as a response to issues of

asymmetries among club members. And lastly, club goods need to be set up according to existing international law, most notably trade laws. There are different views about whether or not Intellectual Property Rights (IPRs) facilitate transfers of green technologies from enthusiastic to reluctant countries. Arguably, collaboration on technology policies is more likely to ensure innovation in a climate club. Additionally, I have chosen to treat Weischer et al.'s (2012) focus on credibility as a fifth condition. Credibility is a central aspect of the debate on using trade restrictions as negative incentives in a club. Avoiding sanctions can be an attractive club good for non-members.

Weischer et al. (2012) outline several potential club benefits a climate club might include. Similar to them, I focus on activities and agreements directly connected to reductions in GHG emissions. However, a climate club might also cooperate on duty-free market access for products that are not explicitly defined as low-carbon.

5.1 Significance

If a club good is significant enough it can alter the cost-benefit analysis of prospective members (Weischer et al., 2012, p. 187). Weischer et al. (2012) focus on economic benefits (related to jobs, investment and trade for instance) that are able to outweigh the costs of joining the climate club. Costs of club membership can take many forms. Hovi et al. (2015, p. 16) propose setting up a "club fee". In their case, members are required to spend 1 % of their GDP on mitigation measures. Hence, the composition of club goods would need to generate large enough economic benefits to compensate for the club fee and entice reluctant countries to join instead of staying on the outside of the club.

I expand on Weischer et al.'s (2012) condition by also considering how club goods can generate political benefits that are significant enough. Indeed, there are large gaps between what is considered to be economically rational and what is politically feasible when it comes to outlining potential club goods. Take the example of emissions trading and carbon taxes. Many prominent scholars believe carbon taxes to be a more suitable, cost-efficient tool than emissions trading for addressing climate change (see Victor, 2011; Weitzman, 1974). Yet politicians time-and-again choose cap-and-trade schemes because they wish to retain the control over costs and benefits of specific mitigation measures. Due to re-election concerns, politicians want to remain on good terms with influential, well-organised societal groups and

seek to avoid climate policies that impose high costs on these blocs. Handing out permits to these groups and linking domestic emissions trading markets is a way of attending to such political priorities. Still, the prospects for creating a well-functioning international carbon market are grim because the very political reasons for choosing emissions trading over carbon taxes also convince politicians to meddle with the global carbon price. The result is hybrid systems; carbon markets combined with regulatory approaches. Thus, purely economic predictions of which club goods that produce the largest benefits do not necessarily fit the political reality.

Throughout the section I concentrate on emissions trading as a proposed club good because several scholars (see Underdal et al., 2012; Weischer et al., 2012) have argued that linking domestic emissions trading systems entails significant benefits. The following sections indicate that this might not be the case. They also raise the issue of defining suitable entry conditions that do not compromise any of Weischer et al.'s (2012) four conditions.

5.1.1 Potentially Significant Club Benefits Associated with Emissions Trading

Emissions trading can in theory contribute positively to a state's cost-benefit analysis because the marginal abatement costs are equally shared among members participating in a global trading scheme. In other words, emissions trading addresses the negative externalities of mitigation and encourages actors to "internalize(…) the social cost of carbon" (Chevallier, 2013, p. 471). By linking emissions trading systems, the market for allowances grows, thus reducing the price volatility and bettering the liquidity of the market (Jaffe & Stavins, 2008, p. 10). The benefits from participating in emissions trading similarly increase. Jaffe & Stavins (2008, p. 10) claim that by linking markets, member states are able to shift focus from assignment of responsibility. With regards to the complex and heated debates about norms of fair burden- sharing, a chance to move past such disagreements cannot be overlooked. Club members can instead concentrate on meeting collective emissions goals cost-efficiently through market linkages. Lastly, as already mentioned, governments are often inclined to use emissions credits as a way of handing out benefits to powerful lobby organisations and societal groups without having to relocate funds from others (Victor, 2011, p. 67). Emissions credits can be characterised as new assets that are not already included in

the state budget. In comparison, carbon taxes have to be collected from citizens that in many countries distrust that the money allocated for mitigation measures are not spent elsewhere.

However, it is worth noting that the potential costs and benefits of linking the various club members' emissions trading schemes depend on the type of system and linkage. There are essentially two main systems of emissions trading: cap-and-trade systems and emission-reduction-credit systems (Jaffe & Stavins, 2008, p.2). In a cap-and-trade system, actors are allocated specific caps on pollution relative to a definition of the maximum global emissions levels (Chevallier, 2013, p. 472). When the participants engage in trade of emissions permits the carbon price fluctuates according to the balance of supply and demand in the carbon market. Such trade systems are thus constructed by governments but not regulated by them. Due to price variations and volatility of allowance prices, the costs of participating in a cap-and-trade system are highly uncertain. Through specific "cost-containment" measures policy-makers can secure more flexibility for companies in meeting their commitments (Jaffe & Stavins, 2008, p. 3). Cap-and-trade systems that have incorporated these design elements give emitters the opportunity to bank allowances for the future, borrow from future permits and take part in offset provisions where participants can take part in emissions reduction efforts outside of the areas covered by the cap-and-trade system and still offset part of their emissions.

For the second form of emissions trading, namely emissions-reduction-credit system, credits are granted according to certified emissions reductions (Jaffe & Stavins, 2008, p. 3). The CDM is the most prominent example of such systems. The two types of trading systems have similar features but in emissions-reduction-credit systems entities participate voluntarily. In these systems participants can earn credits in order to meet compliance requirements of other trading schemes. Despite the similarities of the two systems, using linkage of domestic ETS as an incentive for reluctant countries depends on what type of systems that are linked. Direct linkages between cap-and-trade systems can actually reduce governments' ambitions with regards to setting future caps on emissions.

5.1.2 Criteria for Club Membership and Effects on the Size of Club Goods

An important aspect to examine are the risks of reducing the size of club goods by allowing countries with less stringent climate policy goals to join the club. Weischer et al. (2012, p.

192) taps into the very core of the debate: what "shared vision" should club members commit to in order to ensure transformational change while providing attractive economic benefits of membership? As discussed in section 4.1.3, there are a number of long-term targets club members could agree on through CAD negotiations. At the same time, it can be hard to find a middle ground between imposing standards that are too strict and standards that lack ambition. Entry conditions that are very stringent can deter key players with major markets from joining the club, which would result in smaller club benefits and consequently weaken the incentives for others to join. Similarly, too general club visions and membership criteria would not bring about an *effective* climate agreement. The discussion on criteria for linking domestic emissions trading markets illustrates this dilemma.

Flachsland et al. (2008) assess the potential of linking the EU ETS to other domestic markets. I apply their contribution to discuss possible criteria for linkages between other prospective club members as well. The authors propose taking such considerations at an early stage when setting up an international emissions trading market due to barriers for reforming systems at a later stage. They underline that the question of fair burden- sharing cannot be disregarded as a guiding principle for setting up linkages between domestic ETSs (Flachsland et al., 2008, p. 25). Actors are expected to adopt climate policy goals in order to meet the regional emissions level dictated by fair burden- sharing rules. Without a coordination of long-term climate policy targets and consensus on the various responsibilities of member states, there are stronger incentives for countries to relax their caps in order to sell extra allowances in the system they have established a link to. Their work thus contradicts Jaffe and Stavins' (2008, p. 10) view that club members can merely focus on cost-efficiency of emissions trading and not worry about the various members' responsibilities. Flachsland et al. (2008, p. 25) list two other main concerns for enthusiastic countries that consider linking their ETS to reluctant countries without requiring the prospective club members to adopt specific ambitious targets for their emissions reduction levels. First of all, links to actors that fail to stick to their emissions budgets might jeopardise enthusiastic countries' ability to deliver on present-day and future caps set to carry out their fair part of emissions reductions. Secondly, imagine that a country with ambitious climate goals establishes a linkage with another domestic trade market with less stringent targets. It might set a precedent for negotiations of club entry and prospective members' access to club goods such as emissions trading. As a consequence it might become even harder to incentivise reluctant countries to participate in mitigation efforts. Flachsland et al.'s (2008, p. 25) example of the EU ETS demonstrate the inherent

problems of linking to a less ambitious partner: "when linking unconditionally, the EU would compromise its credibility and thus bargaining power[16] in other negotiations".

What about prospective club members that have adopted climate policy targets but not as stringent as the targets set by existing member states? In these cases a similar trade off exists between enticing new members to join and ensuring significant club goods with strong reputation effects and consequential efficiency gains. To demonstrate this dilemma, an enthusiastic country can choose to link its ETS to a new club member with less ambitious climate policies in the hope that the country will increase its ambitions as a result of joining the club. The main idea is that the new club member choose to take on similar caps as the more enthusiastic club founders at a later stage in order to hold on to the benefits of efficiency gains and reputation effects. The newly accepted member might be subject to a re-assessment of its cap after some years of membership. Another option would be to introduce exchange rates between the various systems' emissions credits. However, varying carbon prices across systems might reduce the efficiency gains of participating in emissions trading. If the very measures taken to include these countries reduce the efficiency gains, it might seriously reduce the club benefits associated with emissions trading. As a last point, Flachsland et al. (2008, p. 26) argue that a two-way linkage between countries that have significantly different strategic climate policy targets complicates potential linkages to third parties. It reduces the coherency of negotiations with other actors and blurs the advantages and costs of a third linkage. For a climate club with expectations of including new partners at a frequent rate, possible problems associated with linking the domestic markets of all its members is a serious issue.

5.1.3 The Political Realities of Establishing an International Carbon Market

A range of scholars has anticipated national trading systems to simply converge into a global one as countries have sought to redeem their Kyoto commitments. In any case, Victor (2011) argues that a convergence of national trading markets has not yet been evident. Instead, enthusiastic and reluctant countries have implemented caps that differ in ambition. The result is carbon prices that vary between emissions trading systems, ultimately creating a

[16] According to the authors "bargaining power stems from the efficiency gains and positive reputation effects of linking" (Flachsland, 2008, p. 25).

fragmented system. It seems that countries are not willing to give up control over the costs and benefits of emissions trading in order to establish a global carbon price. The need for control can explain the EU's restrictions on emissions trading with Russia. Russia's emissions credits have been labelled "hot air" because their credits are believed to lack reliable value, thus failing to represent actual emissions cuts. In the area of emissions trading we have thus seen several examples of the discrepancy between politically feasible responses to mitigation goals that seem to dictate governmental action and the economic perceptions of which policies are most beneficial.

Victor terms the hybrid systems developed by governments in a range of industrialized countries "Potemkin markets". He defines them as "emission trading systems that look like real markets on the surface but, in fact, are designed to hide the real costs of compliance and to channel resources to well-organized groups" (2011, p. 80). In fact, developing countries such as China and India are also contemplating this type of solution. Carbon prices do not reflect real abatement costs because these are incorporated into other regulatory measures. Victor outlines an example of how this policy mix works within the energy sector. For many countries the electric power industry is part of their cap-and-trade system while simultaneously being subject to regulatory mandates of increasing its renewable energy share. Assuming that the command-and-control approach is successful in inducing companies to invest in renewable energy, the demand for emissions credits will decrease because the market is not the actual mechanism steering company investment decisions. In this example, emissions are cut and the costs of mitigation are hidden in electricity bills, making it easier for governments to implement this policy.

Similarly, Victor (2011, p. 68) uses the EU's climate policies to illustrate how governments for the most part rely on regulatory policies to reduce their emissions, despite the existence of a domestic emissions trading market. He underlines that only emissions from industrial sources are incorporated into the ETS and that the EU for the most part rely on regulatory policies to reduce their emissions. A key example of such policies is the laws introduced to enhance the energy performance and efficiency of buildings. Following Victor's earlier assumptions, it is clear that residents are poorly organised and do not have a lot of choice when it comes to accepting these rules whereas the building industry are able to make a lot of money from producing new services and products house owners can purchase to fulfil the necessary requirements. However, such direct governmental regulation entails higher

economic costs than a market-based approach. In other words, the political benefits of camouflaging the mitigation costs demonstrates why a purely economic cost-benefit analysis is insufficient for explaining the policies governments choose to implement.

Clearly, linking national Potemkin markets into a larger regional or international trading system is pointless as the markets are not actually driven by supply and demand and the prices do not convey the actual mitigation costs. By linking hybrid systems with ambitious national emissions trading systems, their ambitions are negatively affected by the decreasing carbon prices. According to Victor (2011, p. 81) trying to forcefully establish an international market will only drag the mitigation efforts of countries willing to do more down to the lowest common denominator and his solution is that enthusiastic countries with profitable markets establish common strict standards for policy implementation that countries will have to adopt in order to link their national market to these.

According to Jaffe and Stavins (2008, p. 11), linking entails that while some actors benefit, others are bound to lose. The uneven effect of linkage for participating countries means that international emissions trading would most likely involve a global shift in wealth. Underdal et al. (2012, p. 482) present simulations of how joint emissions trading in combination with key actors adopting enhanced climate policies might affect the MACs of these countries. Because China and India face lower marginal abatement costs than Japan, the EU and the United States, their emission permits would be of a higher value. In short, the transfer of wealth from major industrialised countries to developing countries such as China and India might be unacceptable to some club members. It is thus important to balance the costs of emissions trading for these members with other complementary club goods that secure similarly significant benefits.

To sum up, in this section I assessed the claim that emissions trading is a potential club good that can produce significant benefits for its members. Linking domestic emissions trading systems entails significant club benefits in theory but in reality, policy-makers are inclined to choose solutions that meddle with the market mechanisms and ultimately create a defective international carbon market. Furthermore, the case of emissions trading illustrates the fact that in order to avoid that the significance of club goods are reduced by the entry of new members, the club should establish common strict rules, policy targets and agreements on distribution of responsibilities. Otherwise, the ambitions of the enthusiastic countries are

brought down to the lowest common denominator. The following section assesses the second condition of keeping club goods exclusive to members in order to successfully attract reluctant countries.

5.2 Exclusivity

The condition of exclusivity refers to the importance of keeping club goods attainable for members only (Weischer et al., 2012, p. 187). The main function of exclusive club goods is to counteract incentives for free riding concerning climate change mitigation. Consequently, it strengthens the incentives for joining the club. Because a climate club provides a global public good, it is crucial that only members have access to additional club goods that reward their willingness to lead in mitigation matters.

Club collaborations on green technology might not succeed in keeping the benefits within the club. However, taking measures to avoid that low carbon technology gets in the hands of non-members contradicts the club's purpose of engaging others to address global warming. Consequently, claims have been made that transfers of low carbon technology is not a credible club good because it is not in the members' interest to obstruct non-members from using these technologies to enhance mitigation. However, Gampfer (2014, p. 101) argues that it is possible to attend to both goals: domestic companies can export low carbon products and services to non-members and benefit from technology sharing in this respect rather than exporting the technology in itself. Still, it might prove hard to find ways of controlling technology diffusion and preventing citizens from non-member countries getting a hold of low-carbon technology developed by private companies or governmental bodies in member states. Another important point is that there already exist a great deal of international organizations and networks promoting technology cooperation between governments, regions and cities. The chances are there will be an overlap between the inventions and services developed in these bodies and in the climate club. It might prove hard to set up projects that are significantly more lucrative than other similar efforts that reluctant countries could just as easily take part in (and perhaps without being subject to stringent requirements and targets).

Reducing obstacles to investments in foreign countries has been suggested as a potential club good. Ways to do so might include providing investors with enhanced information or relaxing certain regulations. However, Weischer et al. (2012, p. 190) discuss the difficulties

associated with making such improved investment conditions exclusive to club members. Reducing investment obstacles and changing regulations would benefit all foreign investors, regardless of their membership in a climate club. Still, a solution to the problem might be to set up information forums and "special investment promotion services" (Weischer et al., 2012, p. 190).

However, keeping club goods exclusive can produce unwanted external effects that in the long run harms the climate club's goal of reducing global GHG emissions. Club collaborations on specific joint projects and investments illustrate this predicament. Member governments might introduce joint projects themselves or they could endorse enterprises originally initiated by the private sector as club investments and present them together with specific climate club goals. Fulfilling the second condition when setting up joint projects and investments as a club good can be challenging as it increases the risk of "negative spillovers into multilateral efforts" (Weischer et al., 2012, 187). A concrete example of possible negative external consequences could be that technology sharing and cooperation in a climate club restrain members from contributing in the UNFCCC technology mechanism (Weischer et al., 2012, p. 187). According to Weischer et al. (2012, p. 187) it is extremely difficult to avoid this type of spillover but being aware of the effect while setting up club goods might reduce the risks.

To sum up, keeping club goods exclusive to members are challenged by processes of technology diffusion and negative spillovers into multilateral efforts. The following section looks into the third condition for successfully applying club goods as incentives, namely the prospects of installing a catalogue of goods that are beneficial for all members.

5.3 Benefits to All Members

Making club goods beneficial for all members does not necessarily mean that all goods should be equally beneficial to all members. Instead it entails that the overall composition of goods includes programmes and commitments accommodated to members' various needs (Weischer et al. 2012, p. 188). For collaborative efforts related to green technology it means that a broad range of various technologies should be included. The same goes for climate friendly products. Fulfilling the condition is crucial for incentivising as many states as possible to join. In this section I assess sources of conflict between developed and developing

countries that should be considered in the event that a climate club were to use trade liberal instruments on climate friendly goods. The discussion surrounds how the categorization and the liberalisation approach to climate friendly products might reduce benefits for some club members. These disputes are crucial points which need to be tackled through complex and lengthy negotiation processes and the CAD model might be a suitable design allowing for such detailed procedures. Weischer et al. (2012, p. 191) similarly envision a club facilitating country-specific "package(s) of incentives" according to their stated conditions. Additionally, financial assistance in the form of side-payments has been advocated as a promising club element that could compensate reluctant countries facing higher club fees than club benefits.

5.3.1 Trade Instruments as Club Goods

The main idea behind reducing or removing tariffs on sustainable energy goods is to strengthen the competitiveness of these products compared to high-carbon products (Weischer et al., 2012, p. 188). Initially, taking such measures can increase demand for export of low-carbon goods and thus create new markets. Parties to the WTO have considered connecting trade and environmental issues along these lines. In fact, participants of the current Doha Development Round have discussed the possibility of introducing a "reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services" (WTO, 2001). However, the WTO negotiations have stalled in a number of major areas, including the discussion on environmental goods (EGs)[17]. At the core of disagreement is the decision on which products to include in a list of "climate goods" as no mutually agreed upon definition of these goods exists. Several problems arise for WTO negotiators trying to classify EGs. First of all, deciding categories and subcategories of EGs[18] involves dealing with the issue of dual-use (Sugathan, 2009, p. 4). For instance, pipes can be used for environmental use in solar hot water systems but they can also be applied for non-environmental use in oil and gas transportation.

Reducing or removing tariffs and non-tariff barriers[19] on sustainable energy goods are believed to be significant tools for increasing trade gains, thus securing significant economic

[17] Yet, 14 WTO members acted outside the main negotiations and decided to remove tariffs on selected environmental goods with prospects of taking their ambitions back to the WTO later on (Sugathan, 2015, p. 20).
[18] The categories and subcategories of EGs are incporporated into the Harmonised Commodity Description and Coding System (HS) managed by the World Customs Organisation (WCO) (Sugathan, 2009, p. 3).
[19] Weischer et al. (2012, p. 189) list "difficult customs procedures, divergent standards and certification rules (and) peculiar technical requirements" as examples of non-tariff barriers.

benefits for members (Sugathan, 2009, p. 1). In 2007, the World Bank issued a report on gains of liberalizing trade in clean energy technologies for 18 high-GHG-emitting developing countries[20] (World Bank, 2007, p. 52). The analysis indicated that removing tariffs produced immense trade gains, which grew even larger with the elimination of non-tariffs barriers. The result indicates that addressing non-tariff barriers to climate goods and subsidies can be a more productive approach, as they often constitute larger obstacles for trade than tariffs do.

An important aspect of using reductions and elimination of tariffs to incentivise reluctant countries is that decisions on product coverage and the chosen approach to liberalisation strongly affect which countries the club good applies to. A general assumption is that climate friendly goods require a lot of capital and advanced technologies that developed and larger developing countries are in a better position to produce (Sugathan, 2009, p.5). If this is the case, trade gains from exporting EGs do not apply to the least developing countries. Indeed, Sugathan (2009, p. 5) shows examples of a range of middle-income developing countries (among others China, India and Brazil) responsible for large productions of clean energy technologies. A climate club that institutionalised trade liberalisation on green technology could thus effectively entice these reluctant countries to join. At the same time he underscores the opportunities for smaller developing countries to engage in South-South trade by exporting production surplus from own solar energy or wind energy sources. The main problem however is related to the classification of EGs. A large share of the mentioned dual-use products originate in small developing countries and if WTO members exclude these from the EG categories it significantly reduces their potential trade gains.

The problem of including climate-friendly products that would also benefit the least developed countries results in several possible approaches to trade liberalisation of EGs. The "list approach" focuses on drafting a permanent list of climate goods that would be subject to reductions or elimination of tariffs (Sugathan, 2009, p. 5). Canada, the EU, Japan and the United States are among the countries advocating this type of liberalisation. On the other hand, India has launched a "project approach" that entails granting temporary liberalisation to goods and services that are part of environmental projects. The latter suggestion is aimed at solving the dual-use issue contrary to the "list approach", which in general excludes such products. Furthermore, the "list approach" has been criticised for failing to complement tariff

[20] The report concentrated on four types of technologies: clean coal technologies, wind energy, solar photovoltaic systems, energy-efficient lighting (World Bank, 2007, p. 52).

liberalisation with other incentives for reluctant countries, such as technological and financial assistance, in order to create markets for sustainable energy goods in developing countries (Sugathan, 2009, p. 6; Vossenaar, 2010). Sugathan (2009, p. 7) calls for other instruments besides trade liberalisation to "address climate mitigation efforts in a broader sustainable development context". According to him, many African states already have low tariffs on EGs but due to low purchasing power they are inclined to prioritise import of other goods. He holds IPRs as another barrier for developing countries. I assess the validity of his claim in section 5.5.1. It is clear that the overall composition of club goods should include other measures that more clearly benefit the least developed countries and enhance gains from trade liberalisation.

As a concluding remark, Sugathan (2009) suggests an alternative to the cooperation on trade liberalisation taken under the WTO:

> Another option is a plurilateral agreement similar to the WTO Government Procurement Agreement, which members could opt to join or to stay outside of. The trade concessions would extend only to participating Members. Such an agreement could also eventually be made multilateral (with benefits extending to the entire membership) once a minimum number of countries, constituting a certain percentage of trade in these products and services, joined (p. 8).

A climate club can constitute this type of multilateral agreement but it would nevertheless struggle to deal with the similar issues faced by WTO members, most importantly classification of EGs.

Due to potential disputes between club members on which goods to include in a climate friendly list of products that would escape tariffs, scholars have proposed that a club could address non-tariff barriers instead. As already mentioned; focusing on non-tariff barriers would most likely create larger benefits for club members than eliminating trade tariffs (Weischer et al., 2012, p. 188). Because of the large amount of barriers and their complex nature it might be easier to find solutions on how to relax such obstacles in a smaller club compared to larger forums with a higher number of participating countries. Although this may be true, reducing non-tariff barriers for fellow club members might be inconsistent with the second condition of exclusivity. Furthermore, it might be at odds with the WTO's non-discrimination principles and thus have a hard time fulfilling the fourth condition of being

legally consistent (Weischer et al., 2012, p. 189).

5.3.2 Side-payments

Side-payments can be a crucial incentive that might eventually persuade reluctant countries to take the leap and join a climate club. Barrett and Stavins (2003, p. 360) define a side-payment as "a direct money transfer made by one party or a set of parties to another". It functions as a tool that compensates countries initially facing higher costs than benefits from club membership. When the costs are covered, reluctant countries have nothing to lose from joining the club. The Montreal Protocol's Multilateral Fund (MLF) is a well-known example of this type of arrangement. It's great success has inspired suggestions of applying similar mechanisms for climate change cooperation. Side-payments are believed to balance the asymmetries between developed and developing countries with regards to vulnerabilities, responsibilities and capacities to address global warming (see section 3.2). Side-payments could be negotiated through negotiation rounds on the various CADs. Still, it is important to realise that the desired effect of side-payments is contingent on the overall composition of club goods (Barrett, 2003, p. 351). Side-payments should be complimented by other significant club benefits; otherwise the enthusiastic countries gain little from participating. As the club attracts new members it will most likely be able to produce increasingly larger benefits. It becomes less dependent on side-payments because reluctant countries are motivated to join if these exclusive benefits outweigh the costs of membership[21].

To sum up, issues of product coverage and adopting a certain type of liberalisation approach can spur on an uneven distribution of benefits from reductions and eliminations of tariffs across member countries. Addressing non-tariff barriers on the other hand would run into some problems with fulfilling the fourth condition, namely being integrative with international law. Section 5.5 explores other club goods that face challenges in adapting to the international rules applicable to their domain. As a last point, side-payments is a promising tool for solving problems of asymmetries between club members and persuade reluctant countries to seek access to a climate club.

[21] Results from simulations performed by Hovi et al. (2014, p. 23) support this argument.

5.4 Integrative with Existing International Law

The last condition related to the ability of club goods to induce reluctant countries to join in on mitigation efforts deals with whether suggested club goods are inconsistent with the existing framework of international law (Weischer et al., 2012, p. 187). In order to limit the scope I focus on trade laws and their implications for proposed club goods. Of special concern is the WTO framework. Firstly, the non-discrimination principles agreed upon by WTO members in the General Agreement on Tariffs and Trade (GATT) might cause problems for some of the proposed club goods, most notably linkages of domestic ETSs. Furthermore, the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) sets guidelines for how to transfer technology from industrialised to developing countries. Collaboration on technology policies in a club demands less attention to trade laws.

5.4.1 GATT's Non-discrimination Principles

The GATT's non-discrimination principles are the most-favoured-nation (MFN) treatment and the national treatment (WTO, 1986). Article I of the GATT outlines the MFN principle and clearly states that "any advantage, favour, privilege or immunity granted by any contracting party to any product originating in or destined for any other country shall be accorded immediately and unconditionally to the like product originating in or destined for the territories of all other contracting parties" (WTO, 1986). However, there are a few exceptions to the MFN treatment. Of most interest for a climate club is the possibility of establishing a free trade area where club members can trade goods under favourable conditions and are allowed to discriminate against third parties.

The second principle requires WTO members to treat foreign products in the same manner as local products once they have been introduced into the market. According to Zelli and van Asselt (2010, p. 81), the Kyoto Protocol's article on international emissions trading can be deemed inconsistent with the GATT's non-discrimination principles for trade. It states that countries not included in the Annex B group (i.e. developing countries and third parties to the agreement) cannot participate in the trade of emission allowances and hence it can be seen as violating the MFN principle. It introduces the possibility that linking ETS between members in a club might run into the same problems. However, GATT has not provided any definitions of "goods", "products" and "services". Zelli and van Asselt (2010, p. 81) therefore argue that emission allowances are not necessarily included in any of these groups.

Nevertheless, governments' ability to freely allocate allowances to specific domestic industries might be labelled as subsidies favouring these enterprises over foreign ones. Handing out financial assets in this way thus might violate the WTO Agreement on Subsidies and Countervailing Measures (Zelli & van Asselt, 2010, p. 82). A more comprehensive legal analysis is needed to establish if emissions trading can be a legally consistent club good.

5.4.2 Technology Transfers and WTO Laws on Intellectual Property Rights

Transferring green technology between club members is a potentially significant club good with high chances of enticing reluctant countries to join. In the UNFCCC negotiations, China has demanded green technology transfers from industrialized countries to meet increasing energy demands while simultaneously easing their transition to a low-carbon economy (Conrad, 2012, p. 449). A recurring issue in the UNFCCC discussions on technology transfer is the role of IPRs. Developed countries have raised concerns about China's failure to adopt a well-functioning system for managing IPRs. At the same time, developing countries regard the WTO's laws on intellectual property rights as a barrier for transfers of green technology. This section deals with these conflicting views. I define green technologies broadly and draw on the definition used by the WTO secretariat[22], which include "technology that makes products and processes more environmentally friendly" (WTO, 2012). However, throughout the section I focus especially on green energy technologies.

The concept of technology transfer can refer to a range of different measures. In the UNFCCC, the demands of industrialized countries to facilitate transfers of climate-friendly technologies to developing countries entails contributing with knowledge and human resources as well as the technology in itself. Zelli and van Asselt (2010, p. 84) argue that instead of focusing on capacity-building in developing countries, companies in industrialized countries should be motivated to produce green technologies at home that are subject to reduced tariffs and reduced non-tariff barriers at the target country. This approach focuses on making it economically beneficial for enterprises to transfer technology through trade liberal instruments. In addition to difficulties of addressing non-tariff barriers due to the MFN treatment, their suggestion fails to consider other crucial aspects. Firstly, it means that trade

[22] The WTO Secretariat has issued a report and a further analysis as a response to the UN's Rio + 20 declaration. The analysis assesses what role IPRs play for innovation and diffusion of green technologies.

gains from exports of climate friendly technologies only apply to developed countries. Secondly, it ignores the relevance of physical and human resources, as well as credit access, with regards to the capabilities of implementing these new technologies (see Littleton, 2009, p.234). Thirdly, the host country's environmental laws and institutional framework are both factors that condition the demand for green technologies. Nevertheless, the WTO framework (mainly on IPRs) present potential obstacles for how green technology can be transferred, which the next section deals with.

There are different opinions about whether or not IPRs promote or hamper technology transfers to developing countries. The main function of the WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) is arguably to target national protectionist behaviour in the area of intellectual property rights, thus handing over more power to technology developers (Zelli & van Asselt, 2010, p. 84). Most developed countries advocate IPRs as essential tools for ensuring innovation in green technologies. Because green technologies are a type of global public good, there has to be a system in place that safeguards and encourages developers and innovators. However, putting patents on green technologies demand high prices from companies located in developing countries that cannot afford such costs (Littleton, 2009, p. 234). Thus, many developing countries demand a less regulated system whereas the majority of developed countries continue to protect intellectual property rights (Shrivastava & Goel, 2010, p. 123). An example of a less stringent approach put forward by developing countries could be similar to the flexibilities introduced in article 31 in TRIPS, which opens up for "other use of the subject matter of a patent without the authorization of the right holder, including use by the government or third parties authorized by the government" (WTO, 1994, article 31). The term has later been referred to as "compulsory licenses" and their use are subject to several conditions (WTO, 2010). But according to the TRIPS, producers are still obliged to pay the patent owner in cases where the government allows for compulsory licensing (WTO, 2006). Hence, the flexibilities incorporated in the TRIPS do not reduce the costs of purchasing green technologies.

However, another solution for a climate club might be that members share the IPRs of technological innovations created through joint R&D projects or pool patents that club members already own from previous research projects (Weischer et al., 2012, p. 190). In these patent pools "participating patent holders agree to license their technologies to one another" (WTO, 1994, p. 10). Some of these arrangements are also referred to as "joint

licensing schemes" (WTO, 1994, p. 10). A patent pool organized in a climate club would necessarily be a closed one and might thus be subject to criticism from competition watchdogs, most likely located in non-member countries.

Ultimately, there seems to be a trade off between facilitating transfers of existing technologies and facilitating new innovations. Victor (2011, p. 140) argues that it is not a question of weakening or strengthening IPRs. In his opinion, the whole energy system is in great need of a transformation, which requires clearing the way for new ideas and not direct all attention to the diffusion of existing green technologies. An approach directed towards collaboration on technology policies thus values public research and aims at promoting favourable conditions for R&D. Section 5.5.3 presents Victor's main reasons for reforming the global energy system and discusses ways of advancing these developments in a climate club.

5.4.3 Innovation and Collaboration on Technology Policies

Collaboration on green technology policies is more integrative with existing trade laws than for instance a club looking to broaden the scope of the TRIPS flexibilities. Victor (2011, p. 116) looks into ways of restructuring the energy system and encouraging new ideas on how to make the renewable energy sector more viable by bettering power storage and power grid stability. He contradicts the view that simply replacing coal with cleaner energy and then diffusing these already existing technologies globally will cut emissions sufficiently. In his opinion, Europe and Japan's failures of keeping emissions flat by merely expanding their use of wind power, nuclear reactors and gas supports this notion. As the demand for energy rises with a steady growing world population, making deep cuts in emissions demands a radical improvement of the energy system's capabilities. Thus, instead of examining the best ways to transfer already existing green technologies to developing countries, he focuses on how governments can coordinate their technology policies to ensure that these new innovations are invested in and made commercially viable.

According to Victor (2011, p. 116) technology policies are strongly needed because when governments do not interfere with market mechanisms in any degree they tend to underinvest in new technologies that often differs radically from the established ones. Additionally, crafting global warming policies becomes a more manageable issue for politicians when they

are able to launch technological solutions. Most importantly, Victor maintains that governmental technology policies should address problems of appropriability[23] and lock-outs for new innovations trying to get a foot in the market. Basic research is often characterized by low appropriability as it has the potential to secure great, yet immeasurable, social benefits. It becomes risky for investors to support projects through a long and costly developing process with no assurances of being compensated for the enormous costs with similarly high and stabile future incomes. Lock-outs from the commercial market exist in many forms, from political and regulatory lock-outs to physical ones. Physical lock-outs might be obstacles for new technologies due to the fact that well-known energy technologies are better adapted to existing infrastructures. As already mentioned, Victor (2011, p. 140) rejects the idea that strengthening or weakening intellectual property rights is part of the solution to problems faced by new innovations, including leaks of technology. By strengthening intellectual property rights he fears that the potential social values of innovation might be jeopardized. Weakening strict patents is not a suitable approach to ensure new technologies are tested as investors would fear that they would not benefit from the innovation in the future. Instead, governments should help fund basic research and most importantly increase the appropriability of new ideas so that they become commercially viable. However, Victor argues that most countries have failed to do so in the energy industry, which has been characterized by deregulation and short- sighted competitive concerns.

Simply funding institutions, e.g. universities, to continuously produce new energy technological ideas without encouraging investments in these innovations is futile. Victor argues that governments should be more active in the process of selecting and promoting specific innovations. This is where a climate club can play a vital part. Victor (2011, p. 148) proposes that "investments should be evaluated continuously against not just their own goals but also their role in a larger portfolio of low-emission technologies". A climate club can serve as a setting where countries can coordinate their technology policies to better fit larger globally interactive structures. Indeed, problems of appropriability and lock-out for new technologies are global in nature. Solving these issues therefore involves a more holistic take on changing the energy system. For example, if significant improvements in nuclear power plants were presented, less resources and focus would have to be devoted to developing low-emission coal technologies as they also produce base load electricity. International

[23] Victor explains appropriability as "the extent to which investors in innovation can internalize the value that arises if a new idea proves useful" (2011, p. 129).

coordination of technology policies additionally reduces the chances of lock-outs and malfunctioning of new technologies promoted by members. To demonstrate, large "NIMBY"[24] protests against Carbon Capture and Storage (CCS) from European and American citizens discourage foreign developers hoping to export their CCS technologies (Victor, 2011, p. 154). Furthermore, when countries are informed about the efforts of other states, the incentives for expanding own projects strengthens as the technology market grows. According to Victor (2011, p. 156), only a handful of countries is responsible for the majority of input (funding of R&D) and output (number of patents) to innovations. By all means, measuring input and output is hardly straight- forward. Furthermore, Victor's calculations are based on general R&D funding and not projects directly aimed at the energy sector. Still, his analysis indicates that there are 5-10 countries ranking innovation inputs and outputs, which makes them tremendously important for the development of future energy technologies. These include the United States, Japan, China, Germany, France, United Kingdom and Canada (Victor, 2011, p. 161). A climate club including these countries would thus be exceptionally well-positioned to develop new and better green technological advancements in a harmonized manner. A possible way of managing coordination could be through CAD negotiations.

Rank	R&D spending	Patents
1	United States	United States
2	Japan	Japan
3	China	Germany
4	Germany	Korea
5	France	France
6	Korea	Switzerland
7	United Kingdom	Canada
8	India	United Kingdom
9	Canada	Netherlands
10	Russia	Italy

Table 5.1: National rankings for innovation inputs (R&D) and outputs (patents).
Source: Victor (2011, p. 161) and OECD (2008).

[24] NIMBY is an acronym for "not in my backyard" and refers to citizen objections to CCS installations in own neighbourhoods.

To conclude, club goods might run into substantial problems in their effort to be legally consistent. First, I looked into how linking domestic ETSs and installing beneficial trade conditions are prone to violating the GATT's non-discrimination principles. The second section presented a discussion of how the WTO's framework for IPRs affect technology transfers to developing countries. Lastly, I focused on collaborations on technology policies as a possibly more legally consistent club good. R&D is a key element in this respect but also providing a setting where club members can coordinate their technology policies to ensure the emergence of new innovations that can reform the energy system.

5.5 Credibility

Barrett (2007, p. 82) underscores the importance of combining positive incentives with negative incentives as part of a long-term strategy of motivating reluctant countries to take on ambitious emissions reductions. Avoiding sanctions on the basis of being a club member can thus be an enticing club good. Also, trade restrictions might be imposed on non-compliant club members that have failed to deliver on their promises and targets. According to Barrett (2007, p. 100), successful sanctioning depends on a balance between severity and credibility. A stick can be of a considerable size and threatening to non-parties but still not function properly if reluctant countries believe it to be incredible. Victor (2011, p. 86) recognizes the potential high economic costs of using restrictions on trade as a punitive instrument but argues that it is politically necessary to do so. One of the largest benefits of trade restrictions is its ability to counteract carbon and trade leakage (Barrett & Stavins, 2003). However, the risks associated with introducing trade restrictions in a club are not to be taken lightly.

5.5.1 Trade Restrictions as Sticks

Trade restrictions and levies on import of goods according to their (levels of) carbon use have frequently been suggested as sanctions that might be set up in a climate club. Barrett (2007, p. 82) presents the Montreal Protocol as a model for how trade-related measures can be used to halt global warming. Parties to the agreement restricted their trade with non-parties of ozone- depleting substances (most notably CFCs) and products containing these substances. The type of restriction depends on the domestic mitigation policies of the club member in question. In a country where carbon taxes are used as a market incentive, the trade restriction would most likely be institutionalised as Border Tariff Adjustments (BTA) whereas a country

with a cap-and-trade system might sanction a non-compliant club member by demanding emissions permits when importing carbon intensive goods (Aakre, 2014, p.5). However, Barrett (2007, p. 101) raises an interesting question about which products should be subject to trade restrictions in a climate club. Nearly all kinds of goods produce GHG emissions in their manufacturing process. In fact, the Montreal Protocol had to dismiss the proposal of restricting trade of products made using CFCs because the enforcement of such a provision was considered to be too complicated. Enforcing BTAs on traded goods means that the amount of GHG emissions would have to be determined for every product (Barrett, 2003, p. 388).

The credibility of trade restrictive measures hinges upon the participation level (Barrett, 2007, p. 100). Similar to the benefits of emissions trading, the number of club members thus conditions the success of applying trade restrictions. Not only does it increase the severity of trade restrictions and reduce the risks of trade leakages, but club members might also be reluctant to actually implement trade-related measures if a considerable amount of large trade markets (e.g. the United States) are still located on the outside of the club as this would harm them economically (Barrett, 2007, p. 83). The fear of countermeasures from the target country can also add to such resistance. Drawing on these ideas, it is reasonable to argue that the amount of club members is closely connected to trade restrictions' ability to fulfil the first condition and function as significant club goods. In a small club, trade restrictive measures might quite simply impose too high costs on members. With this in mind it is reasonable to assume that trade-related measures are more likely to be institutionalised in a climate club at a later stage after positive incentives have managed to induce more countries to join the club. A club including all the major emitters might tip the cost-benefit calculus of reluctant countries that consider joining the club because the significant benefits of market access ensured by club membership would increase considerably.

However, installing trade restrictive measures at a later stage when the participation level is high also entails serious risks. Club members have incentives to protect their national industries using comprehensive regulations as mentioned in section 5.1.3. Hence, fellow club members as well as countries located outside the club might have reasonable doubts about a member using border tariffs as a tool for protectionism. Club members employing trade restrictions might jeopardise the stability of WTO cooperation and in worst case launch trade wars where the threshold for sanctioning is drastically lowered (Victor, 2011, p 86). In other

words, a small climate club institutionalising trade restrictions as an incentive yet hesitating to actually use them against non-members will only hurt the credibility of these incentives.

As a last point, a major concern is whether trade restrictions would be able to fulfil the fourth condition of being integrative with existing international law. Scholars have expressed reasonable doubts about whether trade restrictive measures applied in a climate club would be in accordance with the various trade institutions' existing frameworks, most notably the WTO. Victor (2011, p. 86) expects that the urgent and increasing focus on climate change eventually makes a reform of GATT and other trade agreements (e.g. bilateral agreements and free trade areas) inevitable. Barrett (2007, p. 100) supports this notion. He argues that the trade restrictions applied in the Montreal Protocol most likely were not in line with the GATT and yet no signatories to the treaty resisted the use of such measures. A reform of WTO rules can certainly facilitate the use of trade restrictions in a climate club and in the mean time chances are that the trade organization turns a blind eye to certain oversteps as in the case of the Montreal Protocol.

To sum up, increasing the participation level in a club can ensure severe and credible trade restrictions. Still, it does not alleviate the risks associated with protectionist trade wars. Even though there seems to be ways around the obstacles presented by the WTO framework, it might entail high costs if trade restrictions end up destabilising the WTO overall. In the following section I summarises the main points of chapter five.

5.6 Summary

This chapter focused on club goods as incentives for inducing reluctant countries to follow suit. It discussed the following points.

First, the section on significance revealed that establishing a *properly functioning* international carbon market collides with certain political concerns and is incapable of providing significant club goods on its own. I also found that emissions trading is not a suitable tool for inducing reluctant countries to join a climate club because it demands a certain level of ambition from prospective members.

Second, I found that keeping club goods exclusive to members runs into problems of finding ways to control technology diffusion and avoiding unwanted external effects, such as negative spillovers into other arenas of climate cooperation.

Third, keeping the overall composition of club goods beneficial for all members entails including a broad array of green technologies and climate friendly goods. I found that removing or eliminating tariffs and non-tariff barriers on clean energy technologies is a highly promising club good with the potential of generating large benefits for both developed and developing countries. Lastly, I found that side-payments are useful tools to employ at an early stage of a climate club. They can induce reluctant countries that face high membership costs to join by compensating them financially.

Fourth, I assessed existing trade laws' implications for emissions trading and technology transfers. I found that while many developing countries propose a relaxation of the WTO's framework on IPRs in order to facilitate transfers of green technology, the majority of developed countries are afraid that by doing so, the incentives for innovation are removed. Instead of focusing on relaxing or strengthening IPRs, a club could direct its attention to the construction of patent pools. Another option is collaboration on R&D and technology policies that could foster new innovations able to reshape the global energy system.

Fifth, I examined the condition of credibility in relation to applying trade restrictions as club sanctions. I found that trade restrictive measures are less likely to be implemented in a climate club when major economies are located on the outside of the club. This is because it jeopardises the first condition of significance and entails higher costs than benefits for its members. Regardless of the participation level, a club would in any case be subject to risks of border tariffs being employed by members to protect own industries, which could ultimately destabilise the WTO and at worst cause trade wars between its members.

6 Conclusion: Is the Club Approach a Feasible Alternative to the UN Climate Regime?

This final chapter summarises the thesis, presents the main findings of my two-fold analysis and reflects on the prospects for and challenges of indirectly reaching an effective climate agreement through a club approach.

6.1 Summary

This thesis has analysed the following research question: *What are the conditions (if any) under which a club might lead to an effective climate agreement?*

Chapter 2 provided some necessary background for understanding the current gridlock in the global climate negotiations. It presented the IPCC's role and the timeline for the constantly evolving UN climate change regime.

Chapter 3 began by introducing public goods theory as a premise for applying an alternative approach to the existing modes of international climate change cooperation. It summarised the previous literature on club theory and presented academic reviews of existing climate clubs.

Chapter 4 assessed the following sub-question: *Under which conditions can conditional commitments by enthusiastic countries induce reluctant countries to follow suit?* Here, I assessed various models for implementing conditional commitments in a climate club. I used specific required conditions for well-functioning conditional commitments found in previous academic literature to structure the analysis, namely credibility, leverage, coordination and legitimacy.

Chapter 5 assessed the following sub-question: *Under which conditions can club goods induce reluctant countries to follow suit?* The chapter focused on three main proposed types of club goods: emissions trading, cooperation on green technology and trade-related

measures. Similarly to chapter 4, I analysed this second sub-question according to each club good's potential for fulfilling the conditions for success in incentivising reluctant countries, as proposed by other scholars. These conditions are: significance, exclusivity, benefits to all members, integrative with existing international law, and credibility.

6.2 Main Findings

Six main conclusions emerge from the analysis in this thesis.

First, incorporating conditionality as a main platform for international cooperation on climate change has considerable potential. Still, the success of applying conditional commitments as incentives for reluctant countries depends on four conditions: credibility, leverage, coordination and legitimacy. Following a CAD model rather than the EU's 20-20 by 2020 policy is more likely to result in a credible conditional commitment. The EU launched emissions reduction targets for developed countries as one group and developing countries as a second group. This classification fails to recognize the country-specific capabilities and responsibilities within each group. Negotiating complex, contingent deals accommodated to every new club member's attributes and interests increases the chances of implementing climate policies at the domestic level and thus are more likely to bring about an effective climate agreement. Retaining control over the societal distribution of the costs and benefits of mitigation measures is a high political priority for most governments due to re-election concerns. Ignoring the influence of powerful economic sectors on domestic policy-making by placing too much importance on economic considerations or international targets eventually reduces the political feasibility, and thus effectiveness, of climate agreements.

Second, the prospects of engaging China, a key player and the world's largest emitter, in efforts to combat global warming are brighter in a climate club than in the UN regime. After the publication of Victor's book in 2011, the CCP in China has been subject to increasing pressure from Chinese citizens to address global warming. Implementing effective climate policies has become of national interest as the social, economic and political benefits of transitioning to a low-carbon economy are becoming more evident. China needs green technology transfers and expertise to achieve this transition and a climate club that offers cooperation in this area might succeed in engaging the Chinese government in international

climate cooperation. In any case, the recent developments in China suggest that the country's role as a reluctant participant in international climate negotiations might be changing.

Third, failed attempts to engage a large amount of followers by conditional commitments might introduce perverse incentives to increase emissions. The threat of carbon leakage illustrates this point. Broadening participation in mitigation activities is a suitable response to carbon leakage. In fact, broadening participation has a reinforcing effect: the more countries that agree to emissions reduction policies, the more beneficial it becomes to participate in climate change mitigation efforts. Consequently, this positive feedback loop disturbs the economic mechanisms of carbon leakage.

Fourth, the club goods have to be significant, exclusive, beneficial for all members, integrative with existing international law and credible in order to successfully induce reluctant countries to follow suit. If used alone, emissions trading is not a suitable incentive for inducing reluctant countries to follow suit because it requires a certain level of ambition and willingness to participate in mitigation from its prospective members. Furthermore, I found that establishing a *properly functioning* international carbon market entails a range of problems that might ruin the chances of generating significant benefits through linkages of domestic emissions trading markets at any stage in a climate club. The economic arguments favouring an international carbon market ultimately clashes with the political concerns taken by policy-makers. The outcome is hybrid systems that are not capable of equalizing marginal abatement costs across club members and consequently ruins Underdal et al.'s (2012, p. 481) vision of a "regime of perfect coordination" partly created by the use of emissions trading. In contrast, removing or eliminating tariffs and non-tariff barriers on clean energy technology is a more promising club good that is capable of producing substantial trade gains. Depending on which approach to trade liberalisation the club adopts, trade liberalisation among club members can benefit developed as well as developing countries. Furthermore, a club can facilitate green technology transfers by establishing patent pools. More importantly, members can collaborate on technology policies to ensure new innovations that might reshape the energy system. Lastly, trade restrictions can induce reluctant countries to join, provided that the club has managed to include major economic players. Still, the risks of protectionist trade wars require policy-makers to think twice before installing trade restrictions as sanctions against outsiders of the club. Overall, processes of finding suitable club goods often run into the following conundrum: the main purpose of these incentives is to attract new club

members but my analysis reveals that in many cases the success of applying club goods usually require an already high participation level.

As a fifth point, installing side-payments as a third club element addresses the asymmetry problems between club members. At the early stages of a club, before enough countries have joined and the club goods have become significantly attractive for prospective members, side-payments might be applied as a tool for compensating countries that face higher costs than benefits of joining the club. Put differently, it can alter the cost-benefit analysis of reluctant countries.

Sixth, the analysis reveals that conditional commitments and club goods are intertwined processes that together might restructure incentives and greatly increase a climate club's ability to ensure participation and compliance. Defective enforcement mechanisms are one of the main reasons why the Kyoto Protocol failed to engage reluctant countries. Tying access of club benefits to the promises governments make in the transition process towards club membership strengthens the prospects of high levels of participation and compliance to the club's policies. The success of incorporating one element is thus conditioned by the other element.

To conclude, under the right circumstances a club approach can help change the climate change mitigation game into a coordination game. Thus, if these circumstances are present, the club approach might represent a feasible alternative to the UN climate regime.

6.3 Implications for a Club Approach

My main findings suggest that policy-makers, when deciding on which club goods to incorporate, need to consider how the benefits would be distributed among member countries. For instance, middle-income developing countries such as Brazil, India and China are prominent players in the production of green technologies. Their interests and capacities thus differ greatly from smaller developing countries. This supports the conclusion that conditional commitments that are accommodated to every member country (e.g. the CAD model) represent a more viable model than commitments that only distinguish between developed and developing countries (e.g. the EU's 20-20-20 model).

Using Victor's CAD model better allows for the United States to fulfil its potential as an enthusiastic country. The gridlock at the federal, political level and the Byrd Hagel resolution prevents the United States from responding to or introducing time-limited conditional commitments with a top-up, similar to the EU's 20-20-20 model. However, a CAD model also includes other forms of conditional commitments in addition to time-limited ones. Thus, the United States has the possibility of bidding conditional offers better adjusted to the slow and complicated federal processes of ratification and implementation. Yet, the United States' motivation to launch ambitious offers is dependent on its access to significant club goods that could reward the country for spending large shares of own resources to combat global warming. Conditional commitments made by other states are insufficient as incentives on their own due to the fact that United States seems to be the main actor least sensitive to other's mitigation efforts. Future research on climate clubs should direct its attention to detailed accounts and comprehensive legal analyses of how the United States can craft politically feasible, effective and beneficial conditional commitments, which might offer measures of direct regulation and state policies. Also, future club-theoretical contributions could narrow their scope and analyse specific reluctant countries (e.g. China, Brazil or India) in a club context in order to locate promising and country-specific incentives.

Lastly, club design and timelines for when to establish the various club elements are important factors to consider. In order for climate clubs to successfully construct an *effective* climate agreement, the membership criteria must be stringent enough, and enthusiastic countries must provide club benefits that are sufficiently attractive to entice reluctant countries to raise their ambitions to the same level. Yet, there has to be a balance. A club starting out with too stringent targets might not induce a sufficient amount of club members and thus fail to reach the tipping point that transforms the climate change mitigation game into a coordination game. Whereas side-payments is a promising tool for attracting prospective members at an early stage, other club goods are more likely to be installed at a later stage because they demand a certain level of ambition from prospective members. The section on emissions trading illustrated this. Including countries with too lenient climate targets in a club would reduce the efficiency gains and positive reputation effects associated with linking domestic ETSs. Thus, a club without specific membership criteria could face the same destiny as the UNFCCC: that the ambitions of enthusiastic countries are brought down to the lowest common denominator.

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